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and THE NATION'S HEALTH

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1. Bilhuber, E. S. "Notes from the Office of the Chief Medical Examiner," Baltimore, Md., April, 1948.
2. Bowman, S. A., et al.: "The Treatment of Bacterial Dermatitis with Diaparene," J. Pub. Health, Nov., 1948.
3. Muehlberger, M. L., et al.: "Therapeutic Comparison: Treatment with Diaparene Chloride Ointment," J. Ped. & Pub. Hosp., 1948.

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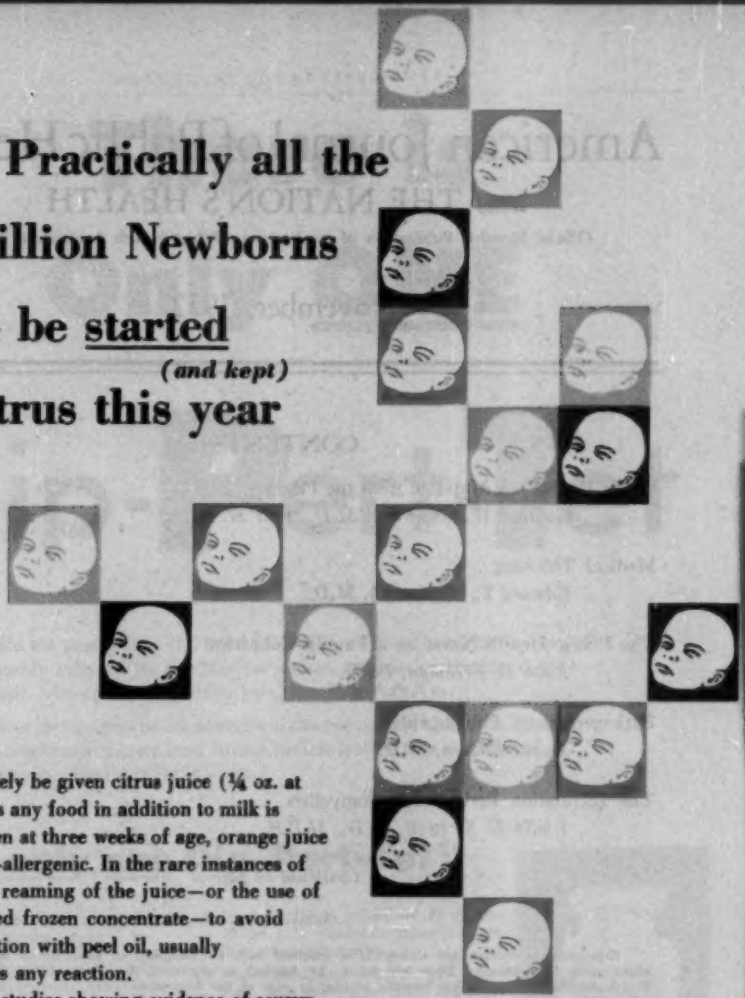

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Official Monthly Publication of the American Public Health Association, Inc.

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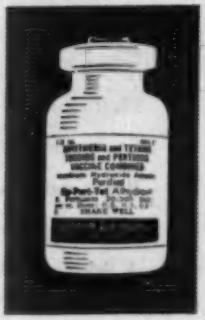

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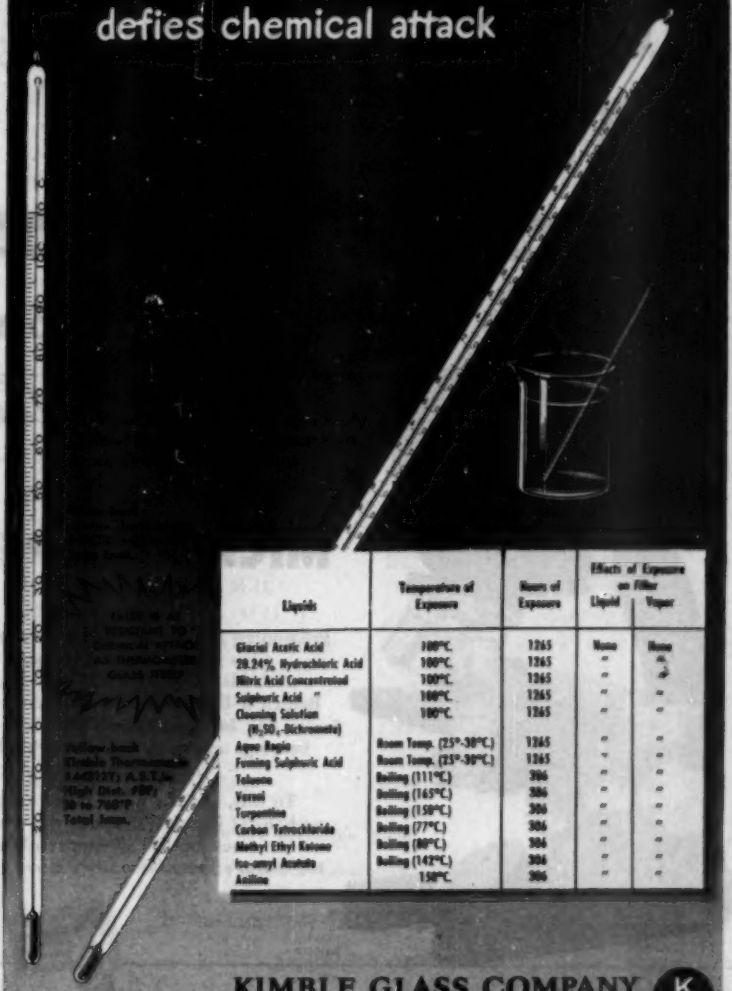

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Sulphuric Acid "	100°C.	1265	"	"
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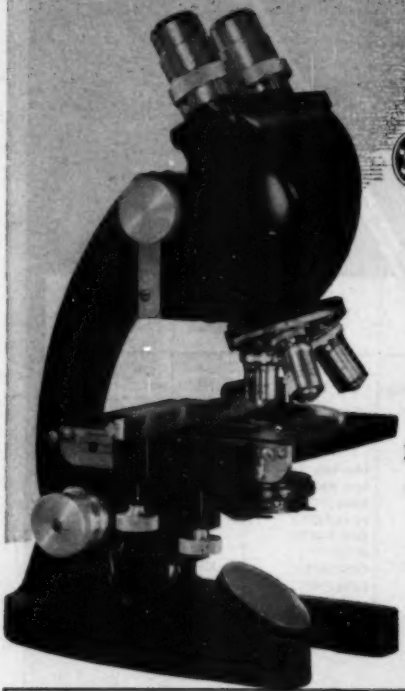

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* Reviewed in A.J.P.H. Vol. 42:7, p. 868, July 1952.

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That meat is an important component of the high protein diet[1] employed in the treatment of many pathologic states is evident from the following dietary suggestions that have been recommended by some authorities in the field of nutrition:

Protein of good quality and in adequate amounts is the most effective dietary agent for protecting the liver from damage and for promoting its repair.[2] In the long-term management of chronic liver disease, a suggested diet includes at least 4 ounces of lean lamb, veal, or beef in both the noon and evening meals.[3]

Among the nutritional needs of patients with chronic ulcerative colitis is protein.[4] For such patients a recommended diet includes 4 ounces of tender meat with luncheon and with dinner.[5a]

In diabetes mellitus, maintenance of protein reserves is important for supporting well-being and vigor, for maintaining resistance to infection, and, in conjunction with good general management, for minimizing many of the degenerative changes commonly seen in this condition.[6,7] One ounce of bacon at breakfast and 2½ ounces of cooked meat at each of the other two meals are valuable in a diabetic diet.[5b]

A program of treatment[8] found useful in atherosclerosis of the coronary vessels includes an adequate diet low in fat (20-25 Gm. daily) and normal or moderately high in protein (60-100 Gm. daily), in conjunction with lipotropic agents. A sample menu of this diet lists 2 ounces of lean meat at both the noon and evening meals.

Underweight or average weight patients with persistent low blood sugar levels are benefited by a high protein diet providing meat two or three times a day.[9] In overweight patients of this type, lean meat is served at luncheon and at dinner.

During convalescence from infectious disease, the importance of "high protein-high calorie" diets including generous servings of meat deserves emphasis.[10] For this purpose, a suggested typical daily menu schedule which results in weight gain, improved vigor, and a restored sense of well-being furnishes ½ ounce of bacon at breakfast and 3 ounces of meat at each of the other meals. Supplementary feedings may include additional amounts of meat.

1. Lewis, H. B.: Proteins in Nutrition, in Handbook of Nutrition, American Medical Association, ed. 2, Philadelphia, The Blakiston Company, 1951, p. 1.
2. Patek, A. J., Jr.: Evaluation of Dietary Factors in Treatment of Laennec's Cirrhosis of Liver, J. Mt. Sinai Hosp. *14*:1 (May-June) 1947.
3. Portis, S. A., and Weinberg, S.: Recent Advances in the Medical Treatment of Cirrhosis of the Liver, J.A.M.A. *149*:1265 (Aug. 2) 1952.
4. Welch, C. S.; Adams, M., and Wakefield, E. G.: Metabolic Studies on Chronic Ulcerative Colitis, J. Clin. Investigation *16*:161 (Jan.) 1937.
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   (b) Ibid., p. 133.
6. Mosenthal, H. O.: Management of Diabetes Mellitus, An Analysis of Present-Day Methods of Treatment, Ann. Int. Med. *29*:79 (July) 1948.
7. McLester, J. S.: Nutrition and Diet in Health and Disease, ed. 5, Philadelphia, W. B. Saunders Company, 1949, p. 364.
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9. Low Blood Sugar Level; Queries and Minor Notes, J.A.M.A. *149*:1358 (Aug. 2) 1952.
10. Goodman, J. I., and Garvin, R. O.: Results of High Calorie Feeding, Gastroenterology *6*:537 (June) 1946.

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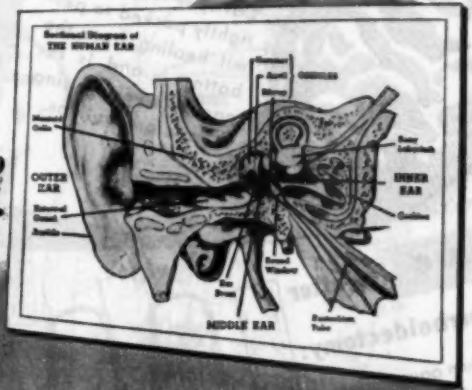

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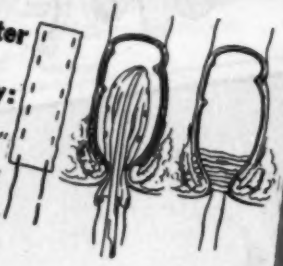

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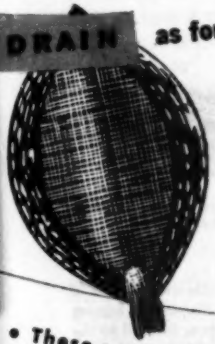

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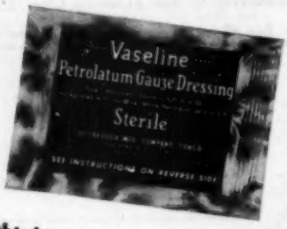

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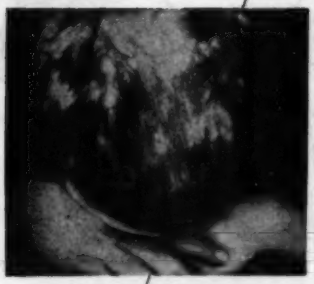

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1. Strittior, C.; Fishman, I. M., and Laurens, S.: *Transactions New York Acad. Sc.*, 13:51, Nov., 1950.

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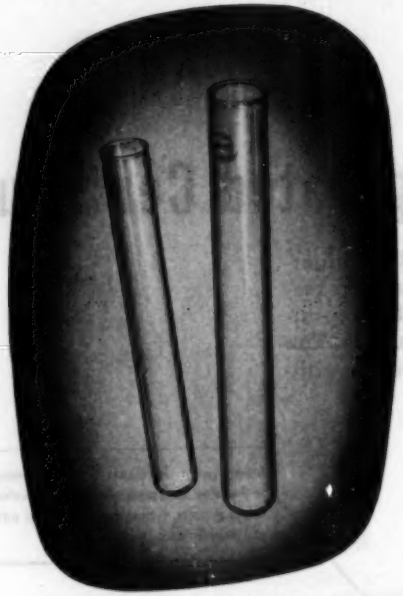

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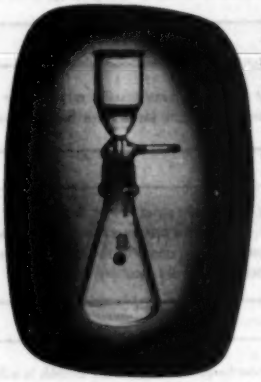

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References:

(1) Culbert, R. W., et al: Amer. J. Pub. Health, 40, 1089-1095 (1950).
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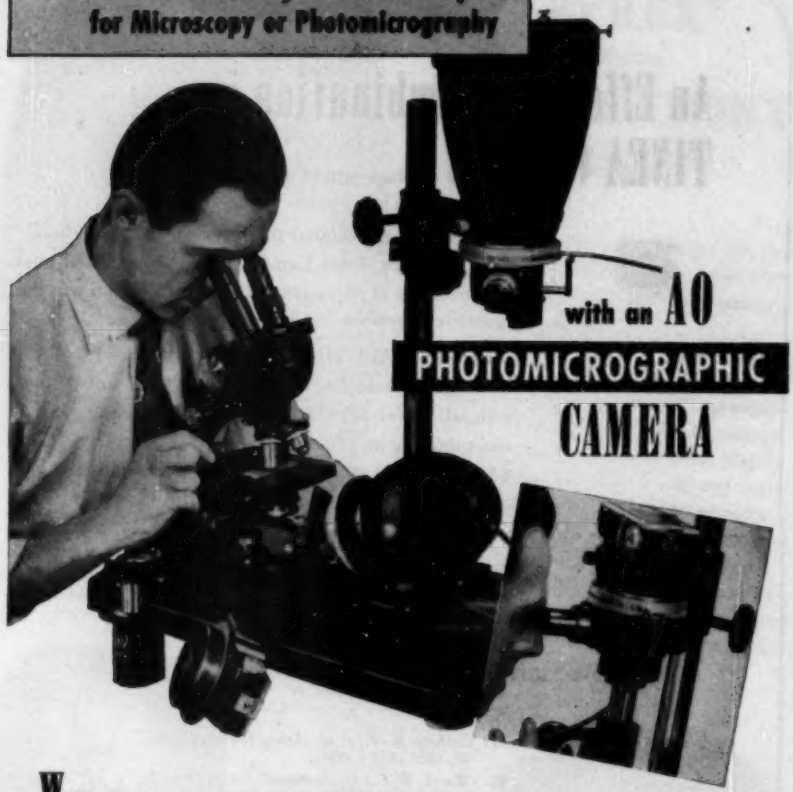

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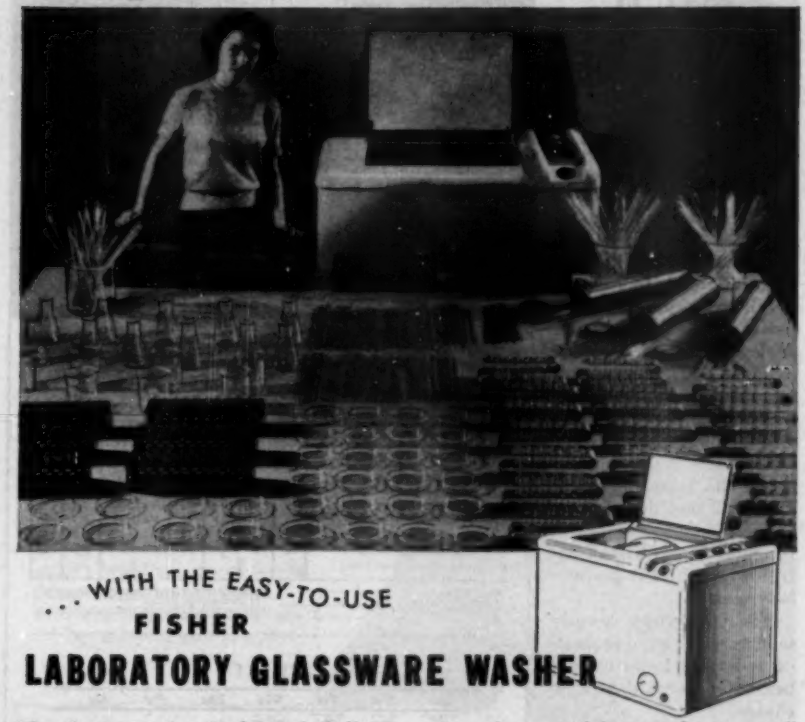

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[1] [2] [3] [4] [5]

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American Journal of Public Health
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Volume 42 · November, 1952 Number 11

Public Health—A Mandate from the People*

GAYLORD W. ANDERSON, M.D., Dr.P.H., F.A.P.H.A.

President, American Public Health Association; Mayo Professor and Director, School of Public Health, University of Minnesota, Minneapolis, Minn.

EIGHTY years ago a group of far-sighted citizens interested in human welfare assembled in New York under the inspiring leadership of Stephen Smith and established the American Public Health Association, dedicated to the promotion of the health of the people of this country. In their deliberations these persons were guided by two impelling forces—a realization of the need for health protection of the people and an acceptance of the concept that the people through their government have a right to better health and a responsibility to take such steps as will assure them of this protection. This was a period when the influence of Bentham, of Chadwick, and of Shattuck was making itself felt on this side of the Atlantic through the creation of state health departments which symbolized the public realization of the need for organized community programs to protect the health of the people.

During the 80 years of its existence the Association has grown to 13,000 members who are interested in the improvement of public health and who are devoting their lives to the achievement of this ideal. The Association is proud of the number and the diversity of its membership, drawn from varying professional backgrounds, but welded together by a devotion to the cause of human welfare. We take particular pride in the large number of members from other countries in the Western Hemisphere who, by joining with us, have done so much to foster good will and understanding among the nations and who have contributed invaluably to the common goal of improvement of the health of mankind.

In this Annual Meeting of public health workers, brought together by this Association, we are met to reëxamine our responsibilities, to analyze our progress, and to plot our future course. During the week of our deliberations we shall discuss the health needs and problems of the people whom we serve. We shall study new scientific and social developments which should be incorporated into public health programs, and we shall analyze the progress we have made in bridging the vast gap between scientific knowledge and its application to the health needs of the people. Underlying all these discussions will be

* Presidential address to the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 21, 1952.

a strong sense of our stewardship for the health protection of our nations, a realization that as public health workers we have both the privilege and duty of serving the people who have entrusted us with the responsibility of safeguarding their health and have given us a specific mandate to concern ourselves with the interests of health and life among the people. It is fitting therefore that, in this first general assembly of our meeting, we should pause to examine the responsibility that public health owes to the people and the mandate that we have received from them.

Such an examination is particularly timely, as there are many in the community who have conscientiously asked themselves what is the scope of public health, what type of problems properly come within the province of a health department, and what limitations should be placed upon the types of services to be rendered by public health agencies. As the frontiers of public health have constantly expanded and new types of problems have come within our purview, some persons have wondered about the underlying social and political philosphy governing the rapid expansion of the public health program and have expressed fears as to the ultimate motives behind such expansion. There has even been a suspicion that a social philosophy foreign to the American tradition was invading the public health movement and that we might be wandering far afield from the basic mandate that we have received from the people and from the guiding principles that have permeated our profession during the past century of its development. It is because of these fears and questions that I believe it is essential that, as we proceed in the deliberations of our Annual Meeting, we should pause to reexamine the mandate and responsibility of public health.

Many definitions of public health have been advanced, but probably none so simply or so clearly expresses the will of the people as the 1869 statute establishing the Massachusetts State Board of Health and instructing that board to "take cognizance of the interests of health and life among the citizens." I do not know the origin of this simple phraseology, but I do know that no other concept has had comparable influence in shaping the course of the public health movement in this country. This phrase, in either its original or modified form, appears in the public health laws of most of our states. As it expresses the will and thinking of the people in establishing health departments, it may be thought of as our basic mandate. As such it is worthy of careful thought and analysis at this time, for it is this concept that has governed the evolution of public health and still defines the scope of our activities.

Public health is instructed to "take cognizance of the interests of health and life" among the people. The phrase "take cognizance of" has been changed in some laws to "concern itself with." In either form it means the same, viz., a purposeful program of action. There is no suggestion here that a health department shall sit placidly on the side lines, calmly recording the events of life and death, noting the existence of disease and factors that contribute to human illness or physical impairment, and yet do nothing whatsoever of a corrective nature. There is no suggestion that we should confine our activities to a study of the causes of illness, or the forces of mortality, or that we should content ourselves with merely pointing out the hazards to health and life without offering some constructive program whereby the people, individually or collectively, may attempt to protect or maintain their health. The terms "take cognizance of" and "concern itself with" are alike in that they clearly imply that the health department, acting as an agent of the

people, shall initiate and carry out such programs as will preserve the health and life of the people. The health department has thus a clear mandate to play an active, not a passive role, in the prolongation of efficient human life.

The phrase "interests of health and life among the citizens" is equally broad, equally clear, and equally compelling. This is a mandate to keep people well, not simply to keep them alive. It is a mandate that covers all forms of ill-health, all causes of mortality. The people have not said to us that we shall attempt to prevent only one type of disease or only a certain group of causes of mortality. Rather have they said that anything that impairs human health, that shortens efficient human life, is a matter of public concern and that the health department as an agent of the people shall attempt to prevent unnecessary illness or wastage of life. No broader mandate could have been given to us than this simple order from the people that we shall "take cognizance of the interests of health and life among the citizens."

This mandate is the logical outcome and expression of a fundamental social concept that is so deeply ingrained within our thinking that few if any would challenge its validity. This is the concept that society has a responsibility to provide those necessities and protections which individuals cannot provide for themselves. Prior to the evolution and acceptance of this concept, the sick and the destitute suffered needlessly or were forced to rely upon the help and good will of individuals. The acceptance of this principle of public responsibility marked the birth of the social conscience of society.

If we accept this concept of social obligation, we come immediately to the inevitable corollary, viz., that the people have both the right and duty to take those measures which will prevent destitution and thus reduce the burden that the community must bear in caring for those who are, or may be, in need. It would be obviously illogical to expect that society should sit back complacently watching the development of incapacitating illness and recording the toll of mortality, without doing something to prevent those conditions which could only mean an increase in the burden to be carried by the community. The death of a wage earner, from whatever cause, is a social loss as it means decreased economic productivity, reduction of the standard of living of the dependents, and all too often the sacrifice of educational opportunities. The death of a mother is more than a personal tragedy; it is a disruption of the fundamental unit of society, the family. It is unthinkable that society should impose self-restrictions upon what it may do through its legally constituted representatives to reduce the personal, social, and economic loss resulting from a death that might have been prevented. So long as we accept the concept of public responsibility, we must likewise accept the idea that the people have both the duty and the right to take those measures which will prevent illness or death from whatever cause. To deny this right of the people is to challenge the fundamental concept of democracy—a government by the people for the benefit of the people.

At the time of the birth of the public health movement, the problems and concepts of disease were vastly different from those of today. That was an era when the prevailing diseases were attributed to toxic miasmata and vapors arising from decaying filth. Modern sanitation was unknown, and filth was the everyday companion of mankind. It was inevitable that attention should have been given initially to sanitation and that the public health authorities of that era should have viewed a program of sanitation as the fulfillment of their responsibility to safeguard "the interests

of health and life among the people." Sanitation thus became the bulwark of public health, not because of any suggestion from the people that the program should be so limited, but because it was at that time the most complete fulfillment of the mandate of the people. The accomplishments of sanitation and its contributions to the welfare of the people are too well known to require comment here.

The latter part of the nineteenth century saw the advent of the bacteriologic era and the acceptance of the idea of personal communicability of many diseases formerly attributed to defective physical environment. The responsibility of public health was thus broadened to encompass concern with the individual and not solely with his environment. This expansion involved diagnostic aids, reporting, quarantine, hospitalization, and provision of specific sera. Later immunization, case finding programs, and treatment clinics became essential parts of the communicable disease control programs of health departments.

It cannot be denied that the development of these activities met with considerable opposition on the part of some physicians who regarded them as unwarranted and unwise departures from the conventional program of public health. The reporting of disease was considered a violation of personal rights and of the concept of privileged communication of the medical profession. The late Hermann Biggs was castigated by some of his medical colleagues for his "effrontery" in demanding the reporting of tuberculosis. The provision of diagnostic aids and of hospital treatment was considered an encroachment upon the field of medical practice, while the conduct of an immunization clinic was portrayed as unwarranted socialization. All of these programs were viewed by some as extensions of public health beyond its proper sphere of activity.

Yet none of these actually involved any change in the fundamental concept of the duty of the health department. If deaths from diphtheria can be prevented by facilitating early diagnosis and provision of facilities for treatment, the community has both the right and responsibility to provide these services. If unimmunized children are to develop diphtheria, the people have the right to protect themselves against it by providing immunization facilities for all alike and not solely for a particular economic group. The occurrence of diphtheria in any child is a menace to the community and therefore a matter of public concern. All persons are entitled to protection, if such be available, just as all alike share in the protection that the community provides for the water, food, and milk supplies. The provision of these services is, therefore, but an expression of the mandate from the people to protect their health through the community-wide application of the developments of modern science.

The first quarter of the present century witnessed a further broadening of the scope of the public health program through the development of the maternal and child health movement. Communicable diseases were being brought under control and sanitation had removed many of the former hazards of life. Yet, the death rate in childhood and maternity was unnecessarily high and could be reduced by community action. The control of other hazards had rendered it one of the most serious problems of that period. It was logical that the people should therefore ask their public health agencies to take such measures as would reduce the needlessly high toll among children and mothers.

Again, however, there were some physicians who sincerely felt this to be an unjustified extension of the concept of public health. Services to the individual might be justified as a public

program for the control of communicable diseases, since the spread of these involved interpersonal relationships and the development of an infection represented the failure of society to protect the individual against the hazard of his fellowmen. Most of the problems of maternal and child health, however, were personal and could not be considered as a failure of society to regulate either the physical or the human components of the individual's environment.

Yet the mandate of the people was clear that the health department was to concern itself with the health and life of the citizens. There was nothing in this mandate that excluded personal problems of childhood or of pregnancy. So long as means existed or could be found whereby the collective resources of the community could be directed toward the improvement of child health and the reduction of infant and maternal mortality, the people had a right to apply these and to expect appropriate service through their public health agencies. If these agencies failed, the people would even find such service through other channels. When the Public Health Service failed to show the proper interest and leadership in maternal and child health, the people through their Congress obtained such service from the Children's Bureau. Again the program of public health was broadened, but the basic concept of protecting the health and life of the people remained unchanged.

Today we are witnessing a further expansion of public health and with it the inevitable challenge from those who would limit its sphere to a narrowly circumscribed field of endeavor. The control of infectious diseases and the decline in child mortality have resulted in a shift in age distribution and in the important causes of mortality. Today the degenerative diseases present the chief causes of death and therefore the major public health problems. The past 25 years have seen a growing interest in and concern for the problems of cancer, heart disease, diabetes, mental disease, and other conditions of adult life. Once more the public has demanded action on the part of its legally constituted health authorities. And once more we have heard the cries of those who view such programs with alarm as an unwarranted expansion of the scope of public health and the expression of a social philosophy that they consider dangerous and alien to our political ideals.

The inception of this program in Massachusetts 25 years ago portrays only too clearly the struggle between these two schools of thought as to the scope of public health. In 1926 the health department, in response to a legislative directive to investigate cancer as a public health problem, reported that this disease was a matter of personal, not public health, and recommended no specifically organized program under health department auspices. An irate legislature replied by ordering the department to establish and organize clinics for the diagnosis and treatment of cancer. When the medical society opposed such a proposal, the legislature further instructed the health department to conduct such clinics "with or without cooperation on the part of local physicians." When the legislation had been passed and signed, the chairman of the House Public Health Committee remarked to the state health commissioner in a friendly yet pointed manner that, "The people have piped; now it's up to you to dance." The splendid cancer program developed in that state is a tribute to the skill with which the commissioner did dance to the music played by the people.

I recall this incident with mixed feelings. As a physician I deeply deplore the language of this Act that was so patent a rebuff to the profession of

which I am proud to be a member. Yet as one who firmly believes in the democratic way of life and the inherent and supreme right of the people to safeguard themselves in whatever way they wish, I see in this incident a clear-cut expression of the mandate that public health has received from the people. We do not know how to prevent cancer by environmental control. We do not recognize it as a communicable disease. It is not confined to an age group that must turn to its elders for protection and support. Yet the people clearly said that cancer is a matter of public concern and therefore within the mandate given to public health to "take cognizance of the interests of health and life among the citizens." When the health department failed to interpret the breadth and import of this mandate, the legislature said in substance that cancer came within the scope of public health, and instructed the department to make provision for additional facilities for diagnosis and treatment. In brief, the people expressed clearly their right and determination to institute collectively such measures as would reduce the toll of human suffering and premature death from degenerative diseases. Such, they said, is public health.

I fully realize that there are those who interpret the growth of programs for detection and control of degenerative diseases as the expression of new social and political philosophies that they consider alien to our American heritage. Some have even challenged such programs as inspired from without this country by those who would break down our social order. The epithet of "socialized medicine" has been hurled during political campaigns on the apparent assumption that the political party in power during recent years has been responsible for the development of programs considered beyond the proper sphere of public health. To such critics I would point out that the Children's Bureau was established under the Taft administration, that the Shepard-Towner Act was passed under the Harding regime, and that the National Act bore the signature of every United States senator as a petitioner. I would further point out that the Massachusetts legislation ordering the health department to provide facilities for the diagnosis and treatment of cancer was not the product of any new political group of radicals. On the contrary it was passed by a Republican dominated legislature and signed by one of the most conservative Republican governors that state had had for several decades. It was a completely nonpartisan issue, supported by both parties alike. It was the voice of the people expressed through their legally constituted legislative representatives. Such has been the history of public health programs everywhere—nonpartisan issues supported by persons of all political beliefs motivated only by a sense of social responsibility.

It is thus apparent that, as one examines the origin and evolution of the modern public health movement, there have been changes in the details of the program in order to meet the changing needs of the community; yet there has been no alteration of the fundamental concept. Today as we see the frontiers of public health expanding and new types of programs being brought within the province of the health agencies it is not surprising that, just as in former years, questions have been raised as to the limitations of public health. One of the latest of these was the unfortunate and short-sighted Cline resolution of the American Medical Association that would limit health department activities to vital statistics, health education, sanitation, communicable diseases, and laboratory and clinical services essential to the control of such diseases, and expressly excluding any diagnostic or therapeutic services outside the field of infectious diseases. Such a concept, if it

were to be accepted and put into effect would eliminate all programs in the field of maternal and child health, sight and hearing conservation, crippled children, degenerative diseases, and mental health. As such it would turn back the pages of public health half a century and require a basic change in the mandate public health has received from the American people. While officially adopted, I cannot believe that this resolution expresses the true feeling of the majority of the medical profession. I am equally certain that it does not represent the belief of the American people of whatever political faith.

As we face the years that lie ahead, we shall see continuing changes in the scope of public health as our programs are modified to meet the changing needs of society. These modifications will be challenged, but I hope that those who challenge will be more moderate in their tone than have been some of our recent critics and more understanding of the rights of the people to enjoy better health. Let us hope that they will respect our motives and integrity as we respect theirs. But whatever their criticism, be it ill-tempered or polite, destructive, or constructive, let us not lose sight of the fundamental obligation that, as public health workers, we owe to the people.

Public health is an organized community program designed to prolong efficient human life. It has no artificial limitations that would restrict its activities to certain types of problems. It must deal with and endeavor to combat those forces that tend to impair or to shorten efficient human life and must meet each problem according to its particular needs. The essence of democracy is the concept of rule by the people, who have a right to protect themselves against all forces that lead to illness or to death. As public health workers and servants of the people we have been specifically instructed [illegible] "take cognizance of the interests [illegible] health and life among the citizens." If we neglect or fail to do so we will be derelict in our duty. I am confident that as we celebrate the eightieth birthday of our Association and look ahead to the duties we must assume in the future, we shall not fail.

Medical Thinking*

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SOMEWHERE between the inspiration inherent in the supremacy and dignity of the individual and the imperious ideal which demands that he should put everything he has into the welfare of the group lies a normal and peaceful line of conduct, both for the individual and the group. We think of it as Democracy. Surely it is within the intellectual capacity of man to chart that course; but he does not want to chart it. He gets too much satisfaction out of his prejudices. Consequently we, the people, are in a state of flux, undergoing vast waves of advance and retreat at the battle line drawn between democracy and communism. We are enmeshed in a great battle between the idea that the individual is supreme and the idea that the individual is unimportant and that the common welfare of communities of individuals is supreme. This is a battle line between the idea that the initiative and contribution of the individual to social progress is all-important and worthy of reward and the idea that there is so little difference in individual contributions of capability and effort that equal rewards come closer to justice than varying rewards based upon individual initiative—a battle line between the idea that minimal governmental interference with production and distribution brings about the best economy and the idea that planned economy has every advantage.

We of the health professions are on the side of the importance of the individual. Even when we dictate that a malefactor must suffer in the interests of society, it is really the interests of individuals in society, not society as an entity, that we have in mind. Our life work is that of improving the welfare of the individual. To that end we could struggle along under the burden of a little more sound thinking in our social relationships.

Pure humanitarianism carries a large romantic element, a strong leaning toward what we think of as influence coming from the heart, in distinction from influence coming from the head. Social progress, however, does not just happen because we yearn for it with loving emotion. The great force in social progress, just as in maintenance of the democratic idea, is sound thinking.

For the 40-odd years during which I have been interested in what physicians say and do extraprofessionally, I have frequently been so bewildered by what seemed to be contradictions, or at least inconsistencies in medical thought, that I find it almost impossible to discover any outstanding, constant group-motivation. I cannot help wondering whether we know what we want, even what we think is right.

The judges of medicine, more and more, will be laymen. It behooves the profession to reach out and grasp the opinion of the nonmedical part of the community if it would reach accomplishment of public expectations. Fundamental to such an approach on the part of the profession is a determination to think through the various implica-

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tions of medicosocial propositions rather than to base conclusions upon prejudices. Moralizing about extra-professional medical behavior, is, however, not the point. Morals, like laws, seem to be necessary to keep people reasonably in line. But, morals are cold, dead principles of good conduct. The point here is that, just so far as the physician swings away from that attitude toward his work that *what is important about it is how it affects the patient*, toward an attitude that *what is important about it is how it affects himself*, just so far is the essence, the vital force of the art of medicine, killed. Without reference to the morals of the situation, as soon as any group whose commodity is service becomes activated by selfish interests (in this case a political position), just so soon will public interest begin to deprive the group of its freedom. The truth of the matter probably is that we do not know what are the social, economic, and cultural elements necessary for optimal medical care. Much experimentation is necessary to get at the truth. The disconcerting part of our medical thinking is the sometimes obstinate dogmatism which we employ to prevent experimentation.

In 1894, when the New York City Board of Health informed physicians that the criterion for the end of the infectious period following diphtheria would be negative cultures, it was bombarded with letters from doctors to the effect that such action constituted interference with personal prerogative and amounted to official impertinence.

In 1889, the Commissioner of Health of New York City was deterred in his desire to institute sanitary surveillance of tuberculosis, in spite of a strong public acclaim for it, by medical opinion that no action was called for by the Health Department. In other words, the practitioner looked on the activities of public health people as interference in his domain. Four years later the Board *requested* the practitioners to notify the Board of all cases of pulmonary tuberculosis coming under their professional care. That request was followed by considerable grumbling, and the trouble really started four years after that when the Sanitary Code was amended declaring that pulmonary tuberculosis is an infectious and communicable disease, dangerous to public health, and requiring that every physician report to the Sanitary Bureau in writing the name, age, sex, occupation, and address of every person having such disease, within a week of the first time seen. The *Medical Record* declared this compulsory step to be a mistaken, untimely, irrational and unwise one. It said that the Board was dictating to the profession and encroaching upon the previously well recognized privileges of the medical attendant. The Medical Societies of the Counties of New York and Kings introduced bills into the State Legislature designed to rescind the clause in the Charter of New York City, which gave authority to the Health Department of New York City to deal with tuberculosis as an infectious disease. Even the Academy of Medicine took action against the enforcement of compulsory notification.

After the death of Dr. Hermann Biggs, Mrs. Biggs wrote:

> Eager, as was his wont, to secure the counsel of his fellows, he called together a corps of the most eminent physicians of the City of New York at the Academy of Medicine to discuss the feasibility of notification of tuberculosis. The eminent physicians were almost unanimous in their opposition to taking of any official steps in the matter. They feared panic, they predicted mental disturbance of the afflicted and their friends, they forecast the ruin of boarding houses, they distrusted the effectiveness of any of the proposed measures for prevention.

The same general attitude on the part of the practitioner, perhaps in an even more exaggerated form, existed with

reference to sanitary surveillance of venereal diseases in 1911–1913. A quotation from Hermann Biggs, medical head of the Department of Health of New York City, is source material:

> The ten-year-long opposition to the reporting of tuberculosis will doubtless appear as a mild breeze compared with the storm of protest against the sanitary surveillance of venereal diseases.

The Academy of Medicine disapproved of municipal clinics for diagnosis and treatment of syphilis with salvarsan and the County Medical Society held a big protest meeting. Dr. Biggs, who knew his doctors, advised waiting for a while for the opposition to fade away. It did, long before penicillin. In 1920 there were 43 VD clinics in 38 cities, which had given 110,000 treatments in the previous two years. The practitioners were doing the work and all was running smoothly.

I do not cite these examples of medical thinking as an indictment of the medical profession. On the contrary, I cite them as evidence of the state of flux of medical social policy in which medium social progress is possible. They show that, while at one time we are convinced that a certain position is right, eventually we become convinced that a quite different position is right. In short, we have the capacity to learn and the honesty to admit mistakes. That being the case there is no basis for rancor when we disagree.

When one recalls that at the beginning of the century there were not only no trained health officers, but also no schools where health officers could be trained, it is clear that the specialty grew out of the practitioner group by trial and error, by on-the-job experience. It is not surprising, therefore, that we have health officers who are specialists in surgery at nine o'clock and official health officers at noon. That represents a hang-over of nineteenth century thinking to the effect that he who holds an M.D. degree is competent in every field of medicine—preventive, diagnostic and therapeutic. It does not necessarily mean that all of you who are part-time health officers are not good health officers. For all I know, you are. But, it does mean that the system of having a health officer in every little town in the state, who is indebted to his political party for his job, is as antiquated as the Dodo. An enlightened public is not going to countenance such a system indefinitely. The county health unit, or something of a similar nature, with qualifying standards for personnel, age limits for public service and unified requirements of sanitation, quarantine and medical inspection is just around the corner. There is much more than a sprinkling of scientifically trained men and women throughout rural counties who know a lot more about diseases, pests, antibiotics, insecticides, fungicides, poisons, and sanitation than did their fathers. They know very well that preventive medicine is based on science and that its truths are not geographically bounded. They know that a well trained county health officer can do a lot more good than a practitioner-health officer in every town. We now have 14 county health departments in upstate New York.

Now let me make it perfectly clear that this idea has not been planted in my mind by anyone in the State Department of Health. I have talked with many such people. I have probed them and sought diligently for their motivations. I find that to a man they lean over backward to accomplish their missions by working with the existing system and personnel. They are doing their utmost to carry on by improving the knowledge and technic of those duly appointed. I find even that they play with the idea that, just as every lawyer is an officer of the court, so is every doctor an officer of health. When

I express the thought that our present system of appointment of local health officers is due for change, I speak as a private citizen. I see it as handwriting on the wall. It is merely a part of social progress. It is a part of the onrushing humanitarianism which, to change a little the order of words in the Declaration of Independence, declares that governments are instituted among men to *secure* the inalienable rights of life, liberty, and the pursuit of happiness. The life and pursuit of happiness of our people demand in many ways that preventive medicine as well as curative medicine, be made readily available to all. This means continuing advancement of public health activities. It means changes in medical education to that end. It means a shifting of more students from the practitioner field to the field of public health where there is, even now, a critical shortage, what General Simmons, Dean of the Harvard School of Public Health, has called, "a shocking shortage among public health personnel." It means that the object of the health profession is to secure and maintain the people's health, not to glorify and expand curative medicine.

The common cold, poliomyelitis, arthritis, arteriosclerosis, heart disease, spastic paralysis, multiple sclerosis, muscular dystrophies, and cancer—these are the enemies of mankind against which we are aligned. It takes organization to fight such enemies. Strategy based upon activities of the practitioner alone is not adequate. In fact, the practitioner, more than any other, needs the organized efforts of investigators and specialists in public health. Financial support from every possible source, including government, is necessary. Never must we practitioners do or say anything indicating that we wish to retain, as a source of income, care in these unsolved problems except where progress has made it possible for curative medicine to obtain definitive cures at coverable costs. Alleviation of the incurable will always be with us in both private and public medicine. Medicine becomes more interesting, more exciting every day; earning money decidedly less interesting and almost ineffective as a stimulus. He who does not grasp the spiritual value of his profession is unworthy of membership in the profession.

There is plenty of room for improvement in medical social thinking. My conviction is that if we live up to the standards of our ethical code even fairly well, we will do all right; but that we must be scrupulously careful not to discourage but rather to encourage all elements of society and all organizations which have an urge to play a part in solving health problems. We practitioners must realize that we find more problems than we solve. We must encourage all who are interested in carrying out research and all who are willing to support it financially, including individuals, community chests, special disease drives and government—local, state and federal. We must support all public health activities and be gratified rather than irritated by expansion of those activities in the interests of preventive medicine for all. We must never get caught in the position of trying to retain for ourselves economic control of any phase of activity in health industry except control of independent medical care for those in a position to pay for it.

There is no escaping the fact that in spite of the boundless opportunities for benefit to mankind lying in medical and allied research—in spite of the utmost importance to the medical profession of the highest possible quality of teacher in the medical schools, and in spite of the absolute necessity for more rather than less public health activity—that individual who means the most to most people is the local medical doctor, the practitioner of medicine. Whatever can be done to help him to think cor-

rectly is worthy of full consideration by scientific investigators, academicians, public health officials, and all governments.

Doctors work hard, certainly, and by and large they are at present well compensated in dollars. There is definite complaint from people of all economic levels that practitioners charge too much for their services. (I never heard any complaint that researchers or public health officers are overcompensated.) It is important that organized medicine continue in its efforts to bring about a scale of reasonable charge for service. At present we are in the throes of assimilating into American medicine a few rather large groups of decidedly economically-minded practitioners. That will either be worked out to the advantage of the purchasing public or we will all go down into controlled economy. The point I wish to make is that there is no satisfaction in concentration upon economic returns in medicine. The satisfactions lie in concentration upon interest in the work itself. In so stating, I do not imply any priestly characteristics. On the contrary, even in the field of materialistic technology this is true. Charles F. Kettering, director of research, General Motors Corporation, recently said:

> The achievements of the past fifty years will be dwarfed by the things to come if we just keep our minds open and willing'y contribute each day an honest day's work.

Thomas A. Edison, on his 73rd birthday, said:

> This country would not amount to as much as it does if the young men of fifty years ago had been afraid they might earn more than they were paid.

It is said that the ideological trends of civilization have grown steadily worse concomitantly with its material progress; that we have become more egocentric, aggressive, competitive, and belligerent. There has been a steadily increasing tendency during our lives to a narrowing of interests and activities of the individual and the group. Medicine is involved in this just as much as any other group. The future of medicine, in so far as its freedom in independent private practice is concerned, depends first, upon its awareness of this trend to egocentric, competitive, and aggressive characteristics; and, second, upon its spiritual capacity to reverse that trend to one of humanitarianism and generous cooperation with all parts of society interested in health problems and in social progress. This is idealism; certainly it is. But if medicine does not move toward spiritual idealism it will sink into egocentric materialism which means loss of freedom to think in terms of the Golden Rule.

Now to Public Health Officialdom permit me to advise:

> Do not ever be discouraged in your daily work by what seems to you unreasonable, short-sighted and selfish failures on the part of practitioners, even on the part of organized medicine, to grasp the great values which are so obvious to you. You know well how we changed our stand on sanitary surveillance of tuberculosis and venereal disease, on mass x-ray chest surveys and care of crippled children. We have obstructed your work in the past; possibly we are doing so right now in the matter of multiple screening surveys and certainly will do so in the future. The point is that when you are right, we eventually find it out and coöperate.

> "We are of different opinions at different hours, but we always may be said to be at heart on the side of truth"—Ralph Waldo Emerson.

The Public Health Nurse as a Family Counselor*

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As the work of health agencies shifts from activities centering largely around mass control measures to the care of conditions in which the active participation of the patient and his family are essential for successful care, family health counseling assumes greater stature among the methods and services through which health programs are implemented. In expanding and sharpening the counseling program, health administrators quite properly look to the public health nurse, who has traditionally carried health counseling and teaching as an integral part of her services to families and whose professional training is strong in these areas, to give leadership and to take a major share of the responsibility for implementation.

Effective health counseling can improve the results of health programs and reduce cost in relation to results—

Methods have been devised which give a reasonably accurate statement of the costs of various service units. For example, it is possible to find out the cost of an antenatal home visit, based on the time required for such visits and certain other basic costs involved in rendering the service. However, three antenatal visits, each with the same base cost might have very different values in terms of the results obtained. Three prenatal visits made for improving family nutrition may have very different outcomes. Nurse A may conscientiously explain the necessary nutritional elements and the seven basic food groups, and yet leave family food practices unchanged because she was unable to interpret this information in terms of three meals a day, adjusted to foods available in that locality at that time of the year and within the limits of the family's budget and tastes. Nurse B may provide excellent and practical advice, yet fail to secure results because the family does not have confidence in her judgment, or feels that she is trying to "tell them what to do" and so do not want to do what she proposes. Nurse C, by listening to the family talk about cooking, about mealtime arrangements, what they like to eat, may subtly lead the family to see ways of enlarging and enriching their food patterns to provide greater health protection for the expectant mother and other members of the family, with the result that food habits are markedly changed. Unfortunately, the exact measurement of such behavior changes is extraordinarily complex and difficult, but it is obvious that the visit made by Nurse C is giving a higher return on the investment than are the visits made by Nurses A and B.

It seems likely, too, that much of the failure of individuals or families to use health department or other facilities wisely may be traced to inadequate un-

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derstanding of their need, and this in turn to inadequate counseling. The patient who leaves the tuberculosis hospital against advice because he did not fully accept his own role in the cure of his disease, the clinic "no-show" who postponed her visit because she was afraid the examination might reveal some illness, the patients who refuse to share clinic facilities used by those of other racial or cultural groups and thus necessitate a duplicated clinic service are examples of ineffective operation and increased costs which might be avoided if more and better counseling were afforded.

In other instances services are used, but the benefits to the family may be far below the desired potential. The individual who attends a multiphasic diagnostic clinic may get the prescribed tests and a referral for further care if it is indicated. Or he may get this, plus a sharpened awareness of the importance of deviations from normal bodily functioning, a better understanding of himself as a physiological entity, a capacity to recognize health needs more promptly and to use his family physician or other community resource early. The broader outcome should certainly produce better secondary control of chronic disease in the long run. The difference lies largely in the extent and quality of counseling. Rehabilitation programs cannot function fully if attitudes in industry and in the home are defeatist or unknowingly punishing. More extensive home care of the chronically ill which would minimize hospital costs and maintain the integrity of the family unit will not be acceptable if it can be achieved only at the expense of distortion of the lives of the other family members. Adequate counseling may assist the family to develop the understandings and attitudes as well as the physical resources necessary to permit home care with satisfaction and pride to the family. There is hardly a program in public health work today which does not depend in large measure upon counseling.

One more, and by no means the least important of the advantages to be gained from improved counseling, is building understanding and support of the health program itself.

The public health nurse has a focal place in family health counseling—

Obviously the public health nurse is not a lone worker in the provision of health counseling. Physicians, sanitarians, clerical workers, receptionists, health educators, teachers, social workers, safety foremen, and a host of others are involved in varying degrees with the counseling of a particular family. It is interesting that the place of the physician in family health counseling is increasing in scope, and instruction in counseling procedures is finding its way into the medical curriculum. In some instances there is an interesting reversal of the usual transfer of responsibility, and counseling responsibilities formerly carried by the nurse are being taken over by the physician. This is especially noticeable in well child clinics.

The place of the public health nurse in the family counseling program, however, seems to be a focal one. One reason for this is that public health nurses are the most numerous of the professional members of the health agency's staff, and are also apt to maintain the most direct and continuing contact with the families served. In 1951, 23,400 nurses were employed in local official and nonofficial agencies in situations where they would provide or directly influence service to families. In addition, about 13,000 nurses in industry should be in position to provide health counseling to families channeled to them through the worker. Some 7,500 nurses teaching Red Cross classes in home care of the sick or mother and baby care are also contributing to the total program of health guidance.

The public health nurse is a worker whom families have learned to trust, and to whom they are accustomed to turn for help. Because she is a generalist in health work, other professional workers also use her as a channel for implementing their programs. The medical staff in a hospital look to the public health nurse for help in deciding whether a family is ready for the return of a patient, the nutritionists expect her to incorporate newer ideas in nutrition into the regular teaching schedule and relay them to families in terms of best buys at the super market and foods that can be prepared in a kitchenette.

The scope of health counseling undertaken by the public health nurse is tremendous. A check of a random selection of current nursing records in an urban official agency recently revealed guidance in such diverse aspects of care as these: interpreting the "no-no" stage to an overanxious mother; explaining to a worried mother what she had "signed for" when she agreed to have her baby receive BCG vaccine; referring a young couple to a marriage consultation center; teaching a father to bathe his baby; helping a woman to accept the changes occurring during the menopause; referring a daughter who felt "tied down" to an ailing mother to a public library adult education group during hours when her sister could "patient-sit"; and explaining individualization of treatment for arthritis to a patient who felt you "had to have pull" to get cortisone.

Concepts of family health counseling have broadened and deepened—

A few decades ago literature on patient and family advisement was liberally sprinkled with references to "persuasive approach," "forceful teaching," and "securing coöperation"—the latter referring to getting the family to coöperate in the plans made by the nurse or the agency. There were many charts or schedules of teaching content, to "guide" the nurse in teaching families in particular teaching situations. The object was to get the family to accept and understand the facts, attitudes, plans or methods that were formulated and presented by the professional worker. Interviews were "controlled," teaching was "guided," families were "motivated" in the direction of the desired action. When teaching was provided in groups, elaborate lesson plans saw to it that the course of the discussion did not waver. Occasionally by slyly worded questions individuals or families were led to "discover" what was on the lesson plan, but in general the course was clearly set. Attention was, in general, centered on physical conditions and care, with some "rules" for mental hygiene interspersed.

Since that time several things have happened to change these concepts of counseling in health. First, the addition of the word "social" to physical and emotional in the definition of health added a new dimension to health care. This places ability to relate oneself to others in the family, community, or the world on a par with maintenance of physical health and the development of emotional maturity and stability as a criterion of health. It demands competence in recognizing attitudes and group behavior that are inimical to health or destructive to the personality of the individual, as well as attitudes and behavior that interfere with the conduct of the health agency's program.

At the same time the rather restricted, timid approach to promotion of emotional health was replaced by a quickened, aggressive interest. Psychosomatic medicine became the fashionable field for discussion. Psychiatrists turned their attention to a contemplation of the forces and patterns of relationships between people as they affect emotional health. Interpersonal relations—the influences and significance of

the needs of people to associate themselves with one another, and to gain satisfaction of their own needs through such association—became a major area of investigation. Anthropologists, physicians, biologists, psychologists, educators, and other professional groups began to compare and synthesize some of their findings about human personality and the forces that mold it. Health counselors looked anew at the ways in which personality development (or ego involvement or attitude formation, if you will) affected acceptance or rejection of health care, and the ways in which the provision of health care was in its turn affecting an individual's personality or concept of himself. Social and cultural patterns were no longer seen as something to which teaching should be "adjusted"—but as powerful forces deeply affecting individuals. It was recognized that they might be turned to the support of health care, or in some cases might serve as formidable, entrenched adverse factors to be routed only by persistent, canny guidance that could change attitudes sufficiently to permit good health care and the security of group conformity to exist in amity.

The spotlight in health counseling is no longer on the professional worker, but on the individual or family. They are the star performers—the key people in getting the job of health maintenance done. Counseling is directed not at doing things for and to people, but toward building the capacity of the family to do for itself.

Adequate health maintenance requires that the individual or family recognize their own place in care; that they use the anxieties, tensions, and fears that occur during illness in a constructive way; that they learn to accept and live successfully with incapacity that cannot be reduced; to use illness or disability as a positive rather than as a destructive force, as a stimulus to greater knowledge, maturity, and personal power. Workers have learned to be concerned about what the individual wants and feels as well as about what he knows. Health maintenance is recognized as primarily the concern of the individual or family, with professional workers standing by to build family competence and understanding, and help them to reduce the physical and emotional costs of illness or disability.

The public health nurse is not only a teacher or adviser—she is an expert resource who uses her own personal attributes as well as her professional knowledge and skill to increase family competence in health care. She strives to reconcile and synthesize what she sees as family needs and desirable behavior with the purposes and needs of the family as they see them, and to direct family thinking and information seeking so that they can jointly come up with an acceptable, workable answer that is safe and effective. She recognizes that just as the attitudes and beliefs of those she serves grow out of their cultural backgrounds and experiences, her own values and feelings also have a cultural, experiential base.

Finally, we have learned that health counseling cannot be a series of isolated, disconnected experiences. People learn within the context of all of the influences and forces that surround them and to which they give their attention. The child who is told to wash his hands before meals and who finds no handwashing facilities in the school is being counseled by both experiences; the family which has had an unfortunate experience with nursing service and then receives an appeal for funds for visiting nursing is equally confused by the differences it has encountered; it will be difficult for them to accept and use future nursing services until the force of the previous experience is counteracted by a new and better one. Counseling goes on in a continuum, and the individual's whole experience with health

services becomes an integral part of the counseling process.

Changed emphasis demands unusual knowledge and skill on the part of the public health nurse—

Probably the greatest demand is for skill in relating herself to others. Our thinking and behavior are influenced by those we trust and in whom we have confidence, by those who we believe are ready to take us as we are and not expect more than we can give, who assume we are decent, responsible people who want to do the right things, but who do not judge us when we do not, who never "push us around."

We can all agree that public health nurses by virtue of their professional training and the factors that go into vocational choice are individuals who like people and who want to help. But sometimes it is necessary to convince families that this is actually the case. Perhaps they associate the public health nurse with the time father was kept from his work as a milkman because Johnnie had scarlet fever "though he was hardly sick at all," or with the health department which represents authority to which they are in constant rebellion; and greet her with distrust before she has had a chance to prove herself. Or she may represent the force that is going to make them face the fact that there is a disagreeable situation to be dealt with—she may be the factor in the situation that forces them to decide what is to be done about securing surgery for cancer or registering for prenatal care when the pregnancy is unwanted. They may say "We didn't call for you, we're getting along all right."

Sometimes the rebellion is not directed to the nurse herself, except indirectly through numerous complaints and expressions of lack of confidence in the doctor, the hospital, the clinic.

It takes skill to use unpleasant, aggressive behavior of families in a constructive way. It takes the right word at the right time in the right tone of voice accompanied by the right facial and bodily expression to get the individual to "blow off steam" and so release the tensions and bring to the surface the things that are bothering him. It takes understanding and maturity to let people complain about services that you think are pretty good, and criticize workers who you know are conscientious and hard working without defending them, and without indicating disapproval in such a way that the individual does not go on. When there is much to do, and staffs are inadequate it is hard to take time to let people talk about the things they are afraid of or worried about. If you have problems of your own it is sometimes difficult to recognize that individuals who have health problems have a right to be discouraged or unreasonable, to strike out at the nurse or the service she represents because they cannot strike back at the illness that baffles and frustrates them.

Knowledge of anxieties and fears that commonly occur in specific illness or guidance situations enables the nurse to anticipate and prepare herself to meet difficulties. She knows, for example, that the strongest and most stable personality may be shaken by fear of defacing surgery. If a patient, faced with such a prospect, is "too good"—accepts the situation without complaint, and follows all suggestions willingly and without protest, her suspicion of emotional distress would be heightened rather than reduced. She would observe the patient with special care, take more than usual time to let him talk, and provide him with leads that would make it easy for him to express his fears directly or obliquely. She would try to appraise the degree to which this behavior might indicate that he is transferring all responsibility to the medical and nursing staff, as though his care was none of his

concern—which would militate against maximum use of rehabilitation facilities. She would carefully refrain from being too reassuring at the wrong time, and so shut off the expression of feelings that the patient might otherwise make. Some of such skill is intuitive—some of it arises from a good knowledge of human behavior and the expressions and effects of fear upon the individual.

Knowledge and critical appraisal of these procedures in action lead to greater skill and satisfaction for the public health nurse. It is through such a relation of the nurse to the families which she serves that doors are opened for instruction and guidance, that the gap between need and seeking help is lessened, that families learn to accept and use nursing service in ways that make a difference in their living habits.

A second big area of skill revolves around appraising the health situation—

The appraisal of health needs and perhaps even more difficult, the development of family appraisal of its own needs, is essential for sound service planning. The nurse needs skill in observing and in directing conversation so that she can get an accurate picture of the situation, and so the family goes as far as it can in seeing the factors involved and their relative importance.

Public health nurses are accustomed to using observation as a means of judging a situation, and professional training, enhanced by experience, has equipped them to be sensitive to changes in physical conditions and indications of emotional disturbance. However, people, including nurses, see what they are looking for in a situation—the things they expect to find, or to which they are attuned. The nurse whose experience in orthopedic nursing is slight will not see as many evidences of deviation from normal as will the nurse whose training and experience have been greater. The nurse who resents taking care of her own bedridden mother may see evidences of family tension and strain, or evidences of the sick person's selfish domination of a family that would be unobserved by another nurse.

Skill in observation of physical conditions will be sharpened if the public health nurse can be kept in close contact with developments in clinical nursing, and thus sensitized to the factors that should be recognized in certain conditions and when specified treatments are being given.

Reliable observation of emotional and social situations may be somewhat more difficult of achievement. We know, for example, that nurses should be able to "sense" anxiety in a patient when it is not verbalized. Is this an intuitive, natural response or is it something which depends on experience and training? Probably such sensitivity is more frequently found in individuals who have learned it through many informal activities in a family group in which each family member was anxious to love and support the other members. The child learns from the mother's attitude that father is worried when he gets home and shows it by a false cheeriness, and so is able to recognize similar evidences of anxiety in others, to see and evaluate small signs of bodily tension, to watch for the things the person does not do or say as well as those that he does express, to see incongruities in behavior in relation to a situation that might indicate dodging the question, to notice irrelevant conversation which may be of much greater significance than that concerned with the matter at hand, to overtalkativeness or a heightened tone of voice. Such observational skill can be learned, particularly by the nurse.

Listening, a traditional component of counseling, may vary greatly in quality and in the contribution it makes to understanding the situation. Listening, properly conducted, is far from a lack of response. From the patient's point of

view it is an interested acceptance of his ideas and expressions of need; from the nurse's point of view it is the accumulation of much valuable diagnostic information. The productivity of listening may be increased by the use of a few well directed questions, designed to encourage profitable conversation by the patient or family. Of course it is perfectly possible to listen too much as it is to listen too little. To withhold help or advice when it is needed to lend security in an effort to get the individual or family to state their own problem or plan when they are as yet incapable of doing so may lead to rejection of professional help entirely. Permitting the conversation to go over and over the same ground, letting someone wallow in misery without ever moving on to constructive action may also fail to move the counseling process forward.

The value and pertinence of observation in relation to emotional and social factors is increased by a sound grounding in the dynamics of human behavior, and an understanding of the ways in which human beings react to frustration in their attempts to satisfy these needs. An understanding of why people are as they are is easier when one knows more about learning—knowledge of the ways in which values and attitudes as well as facts are assimilated, how a given society governs what is learned and the methods by which social values are taught by the group are basic to intelligent observation and appraisal.

A third area of skill which counseling demands of the public health nurse is that of communicating concepts or skills—

Garrett says "There is a difference between expressing a meaning and communicating a meaning." Good communication implies that the information is not only given, but is fully understood by the recipients, that they understand the importance and uses of the information as well as the facts, that they recognize ways in which it can be put to work for them in their daily living.

Good communication requires a common language—a language free from technicalities or ambiguities. Words which are familiar to the public health nurse may be unfamiliar or frightening to the family. With those who speak another language special care must be taken to adjust vocabulary to the family's comprehension.

Good communication also involves "timing," or pacing instruction or other communicative activities at points when the family is interested and willing to pay attention to it. For example, counseling immediately after confirmation of a diagnosis of tuberculosis or cancer might take place while the individual or family is reacting to the shock of the situation. It may not be possible for them to focus attention on the information the nurse is trying to convey, because they are fully occupied with a feeling of fear and inadequacy and lack of direction. If the patient is helped at this point to verbalize his feelings and so neutralize them in some measure and to gain confidence in the interest and willingness to help that resides in the professional staff, direct instruction might preferably be postponed to a later time. Of course this is an individual matter—some patients seek directive answers and facts as a means of meeting the emotional crisis, and the selection of approach and timing will depend on the nurse's awareness of the family's readiness.

The use of demonstration and practice in the teaching of nursing skills is well recognized, although it is perhaps even now not used fully, especially in agencies that do not regularly provide direct home care of the sick. Getting the feel of doing something is usually more effective than hearing about it.

Provision of opportunities for people to observe and participate in situations that afford practice in nonskill fields is less well developed, though interest is widespread. Opportunities for such experiences are great—mothers of school children may participate in the physical examination program in the school or take a "study hour" while teachers go to a meeting, and thus have a chance to see school age children in a group. High school boys and girls may "help out" in the nursery school or health department, and so learn much about handling and understanding children or about the functioning and purposes of health departments. Patients may serve as volunteers in clinics, and so gain prestige and a feeling of responsibility as well as an appreciation of some of the administrative problems incident to provision of clinic service. One such patient said "I sure wouldn't break my appointments after this!" Skill in finding such opportunities and in using them may provide excellent channels for communicating to individuals and families information, attitudes, and skills that we feel they need for successful guidance of their own health care.

Skill in the use of group procedures is gaining greater importance—

Recent investigations have indicated that individuals who learn in groups come out with different answers than those who learn things in individual contacts with a professional worker. People in groups, learning from one another, build a sort of atomic pile of ideas and explorations that add up to far more than the ideas and explorations of the same number of individuals thinking individually. They see more possible solutions to problems, foresee more applicational difficulties that may be avoided. Furthermore, when individuals decide for themselves in groups what they want to do they are more apt to carry this decision through into action than if the decision were reached by other means.

If these somewhat preliminary findings are validated, many questions will be raised about the organization of health counseling programs. For example, the waiting time in a well child clinic, during which one mother teaches another, would be regarded as a crucial teaching period. The preponderantly individualized instruction currently provided in clinics might be greatly reduced in favor of small group meetings.

Whatever relative value of group methods may finally be assigned in health counseling, it is certain that they are sufficiently proved to receive serious consideration in planning programs, and that public health nurses should be equipped to provide group leadership. A significant number of nurses have already been prepared to function in this type of work, but it is likely that many more will need to be so trained if full advantage is to be taken of this method.

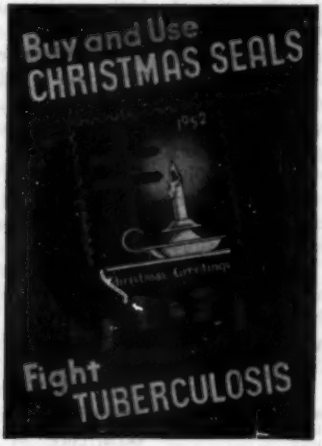
Obviously just getting people together and letting them talk is not enough to assure desirable results, though even that sometives produces amazing consequences! Pooled ignorance may, however, be a negative force. Facts must be provided to the participants in a readily assimilable form so they can serve as the basis for discussion, and give the participants material on which to develop decisions or courses of action. Mechanical or structural organization of the group must be achieved so that members can tell where they are going and how far they have come. Buffers need to be provided to neutralize the effects of hostility, stubbornness, or attempts to dominate or railroad ideas on the part of individual members. Discussion must be stimulated when the group does not want to take the threatening step of looking for new answers, but rather to reorganize and arrange the old ones. Discussion

must be directed when it reaches a nonproductive point, lest time be wasted and antagonisms be built up. Skilled leadership has been shown to do much to improve the quality of thinking in groups, not by providing the "elegant solution" but rather by encouraging more searching thought, clarifying the possible consequences of too hastily contrived suggestions for action, encouraging the use of expert help when indicated. Public health nurses should be prepared to provide such leadership as group work takes its new and expanded place in the total counseling program.

SUMMARY

The counseling program of the public health nurse—the person-to-person contact with individuals and families—is a powerful force in the implementation of health programs and in building understanding and support of health services. Family counseling is concerned with understanding and redirecting emotions and attitudes as well as with the provision of sound health information in a wide range of health situations.

Successful counseling demands a high degree of skill in the various facets of the counseling process—skills which public health nurses now have in part, but which may need intensification and deepening. It also requires an understanding of the application of one's own personal attributes to the accomplishment of a job—an understanding that is related to personal and professional maturity and which can be encouraged by good supervisory procedures. Family health counseling is an expensive business. Its outcomes are dependent upon the quality of performance and soundness of judgment of individual public health nurses, and cannot be controlled by procedures, rules or directives. Administrators should look critically at the resources for preservice and inservice education for the development of counseling skill, and encourage expansion of competence and continuing scrutiny of results of counseling service.



Pathogenesis of Poliomyelitis*†

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SOME recent observations have suggested that it is time to review the evidence on the pathogenesis of poliomyelitis with a fresh point of view and especially to reëxamine the rapidly weakening concept of poliomyelitis as a disease in which virus only invades and multiplies in nervous tissue. First of all, the work of Enders' group [1] in growing poliomyelitis virus in tissue culture has made it less difficult to accept the possibility that virus may multiply in non-nervous tissues. Second, the recent finding by several workers that antibody is already present in the serum of individuals at the time of onset of paralysis [2-4] has led to a discounting of the many unsuccessful attempts to find virus in the blood of paralytic human cases,[5] and has reopened the question of the occurrence of a viremia in the preparalytic period, such as occurs in other neurotropic virus diseases. In fact, the two reported isolations of virus from the blood of patients [5, 6] appear in the light of a rapid antibody response to support rather than to discount the possibility that viremia may be a regular occurrence early in the disease, especially since in one instance the virus was isolated not more than six hours after onset of an abortive illness.[5] The isolation of virus in the blood stream of cynomolgus monkeys and of chimpanzees in the incubation period after simple virus feeding by Dr. D. M. Horstmann at Yale [7] and by us,[8] also has suggested that a viremia occurs early in the human disease. Such an occurrence would raise the important question of whether the viremia is merely an incidental phase of the disease or whether it is related to the occurrence of paralysis or the development of antibody.

As a point of departure in the analysis of this problem, I should like to discuss our findings in chimpanzees. By every criterion which can now be applied, the disease which follows simple virus feeding in chimpanzees is similar to that which occurs in human beings. A high rate of alimentary infection, and low rate of paralytic disease, are common to both species, and clinical and pathological aspects of the infection are indistinguishable.[9, 10] Serum antibody formation in chimpanzees appears to be similar in time course and in magnitude to that which occurs in human beings given virus by mouth, as reported by Koprowski.[11] Finally, natural paralytic and silent infections may occur in chimpanzees, since not only were two cases described in a children's zoo in Cologne,[12] but also instances of accidental infection have occurred in two laboratories.[13, 14]

The chimpanzees first to be described were inoculated by means of simple virus feeding and subsequently were studied in detail in regard to time of occurrence of fecal virus excretion, viremia, paralysis, and serum antibody formation. The virus used, the Wallingford strain, is infective in rodents

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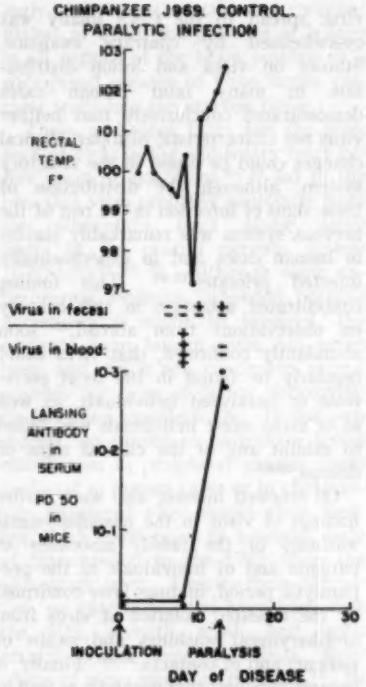

FIGURE 1—Paralytic poliomyelitis infection in chimpanzee J-969 after single feeding of 5 ml. of 20 per cent suspension of rhesus spinal cord containing 1,000 intracerebral PD_{50} of Wallingford strain (Type 2) per ml. + = paralytic poliomyelitis in rhesus monkey inoculated with chimpanzee fecal suspension (intranasally), or undiluted serum (intracerebrally). − = absence of infection in rhesus monkey similarly inoculated. Positive and negative results confirmed by histological examination of spinal cord sections after 30 days. Note viremia on eighth day, when virus titer in serum was $10^{-1.5}$.

and is of the Lansing type (Type 2), so that specific antibody formation could be studied in quantitative detail by means of mouse neutralization tests, with 32 PD_{50} of virus, and tenfold serum dilutions.

Of 4 young chimpanzees which had no previous specific antibody in their sera, 2 were paralyzed after incubation periods of 13 and 17 days respectively (Figures 1 and 2). In both animals the only clinical sign which preceded the sudden onset of paralysis was fever. Two striking findings are, first, the demonstration of viremia preceding the onset of paralysis by 5 and 2 days respectively, and the sharp rise of antibody immediately thereafter. The occurrence of specific antibody at the time of paralysis has been observed in human cases and may account for the usual failure to isolate virus from the blood of patients, or of paralyzed animals infected by virus feeding. A third chimpanzee was shown to have a viremia on the eighth and eleventh days after virus feeding and a sharp rise of antibody immediately thereafter, but no

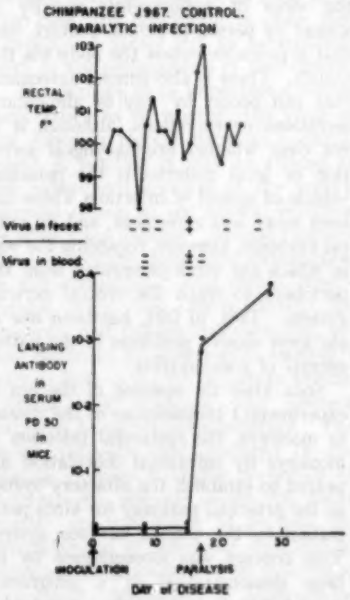

FIGURE 2—Paralytic poliomyelitis infection in chimpanzee J-967 after virus feeding similar to that in animal J-969. Symbols as in Figure 1. Note rise of serum antibody from 0 to titer of 10^{-4} in a period of 2 days.

signs of infection were noted until pathological examination 2 months later revealed he had experienced a typical nonparalytic infection of the CNS. In the fourth chimpanzee, virus was not isolated from the blood on the eighth day after virus feeding, preceding the appearance of serum antibody. It is interesting that this chimpanzee showed no signs of poliomyelitis, but experienced an alimentary infection, and showed a slower antibody rise than occurred in the 2 paralytic cases. These results will now be discussed in relation to other evidence bearing on the principal problems of pathogenesis in primate poliomyelitis.

In regard to the portals of entry and of exit, at the present time there appears to be almost complete agreement that the virus of poliomyelitis usually is spread by person-to-person contact, and that it probably enters the body via the mouth. There is also general agreement that exit occurs by way of alimentary secretions or excretions, although it is not clear whether oropharyngeal secretion or fecal material is the principal vehicle of spread of infection. There has been much less agreement, and no critical evidence, however, regarding the way in which the virus penetrates from the periphery to reach the central nervous system. This, in fact, has been one of the most elusive problems in the pathogenesis of poliomyelitis.

Soon after the opening of the era of experimental transmission of the disease to monkeys, the successful infection of monkeys by intranasal inoculation appeared to establish the olfactory system as the principal pathway for virus penetration to the central nervous system. This concept was strengthened by the later demonstration of a progressive spread of virus and of lesions from olfactory mucosa, to olfactory bulbs, and down the brain stem to the spinal cord. After a period of over two decades, this concept of an olfactory pathway for virus spread to the CNS finally was overwhelmed by contrary evidence. Studies on virus and lesion distribution in many fatal human cases demonstrated conclusively that neither virus nor characteristic histopathological changes could be found in the olfactory system, although the distribution of these signs of infection in the rest of the nervous system was remarkably similar in human cases and in experimentally infected primates.[15-20] This finding concentrated attention in this country on observations from abroad,[21] soon abundantly confirmed, that virus could regularly be found in the fecal excretions of paralyzed individuals, as well as of many other individuals who failed to exhibit any of the clinical signs of disease.[22-25]

Of renewed interest also were earlier findings of virus in the nasopharyngeal washings of the family associates of patients and of individuals in the preparalytic period, findings later confirmed by the repeated isolation of virus from oropharyngeal washings and swabs of patients and of contacts.[26-28] Finally, it became apparent that paralytic as well as subclinical infection could be produced by simple feeding of virus to cynomolgus monkeys[29-31] or to anthropoid apes[9, 10, 13] without involvement of the olfactory system.

Other clearly established facts nevertheless supported the general acceptance of the idea that the pathogenesis of poliomyelitis differed radically from those neurotropic virus diseases which are characterized by a demonstrable viremia and which are transmissible to the mammalian host via infected arthropods, such as mosquitoes and ticks. First, virus was so rarely isolated from the blood of paralytic cases and of fatal cases that even the few positive isolations were considered with some degree of suspicion by most workers. Second, the distribution of lesions in the brain was so restricted as to contrast strik-

ingly with the arthropod-borne encephalitides, in which the presence of lesions in all regions of the brain pointed to a widespread passage of virus across vascular walls into the nervous tissue.

These, and other facts, and the presence of virus in the alimentary tract before onset of symptoms [32, 33] led to the idea that virus probably penetrates from the alimentary tract along nerve fibers to the central nervous system (CNS).[20, 34, 35, 36] Although some experimental evidence suggested possible nerves which might be involved, the evidence from human cases has never been, and still is not, conclusive, except possibly for cases of bulbar poliomyelitis following tonsillectomy. In our own studies, no consistent pattern of lesion distribution in peripheral ganglia could be found in human cases or in chimpanzees paralyzed after simple virus feeding which could point to a neural route of transmission to the CNS from the alimentary tract. Despite these difficulties, we entertained the hypothesis that the fifth, seventh, ninth, and tenth cranial nerves were the most likely routes of virus spread to the CNS.[35] In addition to the absence of critical evidence for neural spread of virus to the CNS, moreover, some early experiments suggested the possibility that under certain special conditions virus might make its way to the central nervous system from the periphery via a non-neural pathway. German and Trask, for example, showed that poliomyelitis infection could result in animals inoculated into completely denervated extremities.[37]

Some of our own early experiments could also be interpreted in this light, since in rhesus monkeys inoculated in the lumbar spinal cord after complete thoracic cord transection with dural ligation and bilateral sympathetic trunk section, poliomyelitis infection resulted in the central nervous system above the transection after a prolonged incubation period in a few instances.[38] Although we postulated a circuitous neural route for the virus, via the lower intestinal tract and the vagus nerve, I must admit that we were struggling hard to keep the virus within the confines of the nervous system. It must be added, however, that the trauma associated with both of these experiments may have made possible a viremia and a passage through part of the blood brain barrier which ordinarily would not have been penetrable in the rhesus monkey.

When we now add to these findings in experimental animals the evidence of Horstmann and of ours, that viremia is regularly present in the incubation period after simple virus feeding in cynomolgus monkeys and in chimpanzees, and that virus has actually been isolated from the blood of an early abortive case, the conclusion is plain that viremia is a factor still to be reckoned with in the pathogenesis of this disease.

The perhaps more important question next arises as to whether the virus in the blood is merely there as a casual event or whether it may be related to the subsequent invasion of the central nervous system in the *natural infection* or after virus feeding. Several observations contribute suggestive information in this connection. Our recent experimental work has demonstrated, for example, that passive immunization, before challenge by simple virus feeding,[39] with as little as 0.1 ml. of human gamma globulin per kilogram can prevent paralysis in cynomolgus monkeys. The serum antibody level produced by the gamma globulin is at the borderline of detectability, whereas levels 500 times greater are insufficient to prevent the establishment of intestinal infection in chimpanzees as evidenced by fecal virus excretion.[8] Moreover, a prophylactic serum antibody level 100 times greater than that which completely protects cynomolgus monkeys challenged by simple feeding fails to prevent paralytic

TABLE 1

The Influence of Gamma Globulin on Prophylaxis and Therapy after Intranasal Inoculation in Rhesus Monkeys *

	Approximate Intranasal Virus Dose	*Poliomyelitis Rate* †	*Prostrating Paralysis*	*Fever*	*Incubation Period in Days*	*Onset of Paralysis, Days after Onset of Fever*
Experiment 1						
Controls	10	5/6	4/6	5/6	9–11	3, 3, 1, 3, NP ‡
Treated on first day of fever		5/6 **	5/6	5/6	8–10	4, 3, 2, 3, 5
Experiment 2						
Controls	10	5/6	5/6	6/6	7–9	3, 3, 3, 4, 2
Treated 1 hour before inoculation		3/6	0/6	6/6	10–12	4, 1, 5
Experiment 3						
Controls	3	6/6	3/6	6/6	8–11	3, 3, 3, 3, 5, 5
Treated 24 hours before inoculation		2/6	1/6	5/6	9–11	4, 6

* The gamma globulin was given intramuscularly in a dose of 10 ml. per kilogram in every instance. Brunhilde virus was used for inoculation on 2 successive days.
† Negative monkeys had no lesions in olfactory bulbs.
‡ NP = Nonparalytic poliomyelitis.
** Only 5 were treated.

poliomyelitis in rhesus monkeys inoculated by a known neural pathway, the olfactory route, when a not greatly larger virus dose is used. Table 1 shows that in rhesus monkeys inoculated intranasally with approximately 3 intranasal PD_{50} (Experiment 3), only a partial protective effect is shown, although 10 ml. of gamma globulin per kilogram were administered 24 hours before inoculation. No protective effect of gamma globulin appeared when the same amount of gamma globulin was administered at the first sign of fever following intranasal inoculation (Experiment 1). These experiments suggest that antibody in large amounts is not only ineffective in therapy at the first sign of infection following inoculation by a peripheral route which has a *known* neural pathway to the central nervous system, but is also relatively ineffective prophylactically under the same conditions.

Another line of evidence which supports the concept of spread of virus to the central nervous system from the blood after virus feeding is more direct. In a series of 23 cynomolgus monkeys fed Mahoney (Type 1) virus on 3 successive days, 12 were paralyzed and 11 remained well. Of those paralyzed, 6 were shown to have viremia on the seventh day after the first virus feeding, whereas none of the 11 which remained well had a demonstrable viremia on the same day (Table 2). Seven of the paralyzed monkeys which were bled on the day of onset of paralysis had no demonstrable viremia at that time. This experiment suggests a relationship between viremia in the incubation period and the subsequent development of paralysis, which, however, will require confirmatory evidence. Although the correlation between viremia and paralytic infection may be high when virulent strains, such as the Mahoney strain, are involved, a lesser degree of correlation may be found with strains of lower virulence. In Horstmann's series,[7] viremia occurred in two cynomolgus monkeys which had no apparent disease, although the absence of central nervous system invasions was apparently not confirmed by post-mortem histological

TABLE 2

Relation of Viremia to Paralysis in Cynomolgus Monkeys after Feeding Poliomyelitis Virus *

Paralyzed Monkeys	*Viremia on 7th Day after Initial Feeding*	*Viremia on Day of Paralysis*	*Incubation Period in Days from First Feeding*
K-549	+	− −	14
K-553	+	− −	14
K-547	+ +	− −	10
K-665	+		10
K-669	+		9
K-662	+		9
K-552	−	− −	13
K-546	− −	− −	10
K-550	− −	− −	10
K-663	−		10
K-668	−		9
K-557		− −	7
Total	6/12 †		
Monkeys not Paralyzed			
K-545	−		
K-548	−		
K-551	−		
K-554	−		
K-555	−		
K-556	−		
K-664	−		
K-666	−		
K-667	−		
K-670	−		
K-671	−		
Total	0/11 †		

* 1 cc. of Mahoney virus (Type 1), containing approximately 10,000 intracerebral PD_{50}, was fed on 3 successive days. This apparently large dose, however, can be seen to be the equivalent of only 1 PD_{50} by the method of inoculation used.

+ = 1 monkey paralyzed after intracerebral inoculation with serum.

− = 1 monkey remained normal after intracerebral inoculation with serum.

† $X^2 = 5$. $P = 0.02$.

examination. In a recent experiment of our own in chimpanzees, one animal was shown to have had a viremia on the tenth day after virus feeding, but no paralytic infection developed, and no CNS lesions were demonstrable after sacrifice two months later. Finally, in human paralytic cases, as I mentioned, the presence of serum antibody at the onset of paralysis suggests, as it does in our chimpanzee experiments, that a preceding viremia was associated with the occurrence of paralysis.

It is clear that only additional research directed at this important issue will make possible a decision regarding the importance of viremia in relation to CNS infection. In the meantime, it is necessary to keep an open mind concerning the possibility that virus may penetrate into the CNS from the blood stream, perhaps by way of a point of greater penetrability such as the area postrema in the medulla oblongata. Entrance of virus at a single point would be consistent with the pathological picture of restricted lesions in the brain, in contrast with the indiscriminate distribution of lesions in the arthropod-borne encephalitides. If such entrance were effected through the area postrema in the floor of the fourth ventricle, the greater intensity of lesions which has often been observed in this region and along the central gray of the brain stem in human infections, and in orally inoculated chimpanzees and cynomolgus monkeys, could equally well be explained either by such penetration or by entrance along cranial nerves subserving the alimentary tract, as we have previously postulated.

Figure 3 shows the relationships discussed in schematic form, as well as possible pathways of spread from one virus phase to another. It can be seen that we postulate a phase of virus multiplication which has been given little attention before and which may be referred to as the vascular phase. This includes the blood, and perhaps organs in close relation to the blood stream (lymph nodes, spleen, kidneys, and possibly others), and from which virus has been isolated as late as the onset of paralysis and even at autopsy. Our hypothesis is that the vascular phase may be initiated by penetration of virus from the alimentary phase into the blood stream, or into regional lymph nodes. One can only speculate at this time regarding the mechanisms responsible for the vascular virus phase. Either large amounts of virus must find a way to the blood stream from the alimentary mucosa, or possibly small amounts leak through, with infection and multiplication of

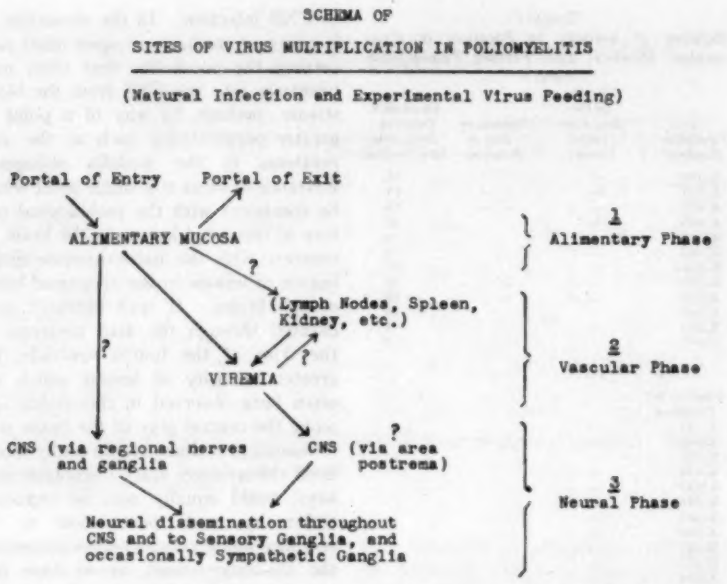

FIGURE 3—Schematic representation of sites of virus multiplication and possible pathways of dissemination in the body in the "natural" human infection, or after simple virus feeding in chimpanzee and cynomolgus monkeys.

virus resulting in the associated organs followed by excretion of virus in even larger amounts into the blood stream. Several facts tend to support the concept of an independent vascular phase of virus multiplication rather than the incidental occasional virus invasion of the blood suggested by others. First, the presence of a substantial concentration of virus in the blood of two chimpanzees [9] indicates more than mere leakage of virus from the alimentary phase in this species, but rather virus multiplication in a tissue in close association with the blood stream. Investigation of titers of virus in the preparalytic period in the walls of the small intestine or in lymph nodes and spleen may yield interesting information in this connection, since the source of the viremia should be an organ with at least as high a titer as that which may occur in the blood.

Unfortunately, the evidence from human cases is as yet fragmentary, and the study of this problem in human beings is seriously hampered by the probability that serum antibody is present when material is taken at autopsy. Sabin and Ward [40] isolated virus from a pool of lungs, liver, spleen, and kidneys of an autopsy case with the shortest duration of disease in their series (2.5 days). Separate assay of lung, liver, and kidney material was negative, so that there is a suggestion here that the spleen contained virus. Isolation of virus from a pool of axillary and inguinal lymph nodes from the same case has the same significapce, but the isolation of virus from human axillary lymph nodes and mesenteric lymph nodes, in the absence of viremia, by Wenner and Paul is of considerable interest and importance.[41] The isolation

of virus by Sabin and Ward [42] from lymph nodes, spleen, kidney, and urinary bladder of cynomolgus monkeys paralyzed after virus feeding also is suggestive, but this finding must be qualified by the fact that the presence of virus in the blood was not excluded in the animals reported. Second, the ease of growing virus in tissue cultures of primate testes and kidney suggests that non-neural tissues, such as lymph nodes, spleen, or kidney may also be sources of virus proliferation in the intact host.

I now want to turn to the property of the virus which we call "neurotropism," namely, its ability to invade and to multiply in nervous tissue. This is a property which changes a harmless relationship of virus and human species into a disastrous event for those persons in whom the virus escapes from the alimentary tract and enters the nervous system. An understanding of the neurotropism of this virus, it is obvious, can do little to aid us in controlling the spread of poliomyelitis. It can help us, however, to understand the nature and the aftereffects of the disease, upon which palliative treatment and rehabilitation depend, and upon which may depend the effective use of chemotherapy —if a potent chemotherapeutic agent should ever be developed.

Within the central nervous system the ability of the poliomyelitis virus to traverse nerve fibers is expressed in a tendency to continue its spread along nerve fibers from one end of the central nervous system to the other. Unlike the neurotropic viruses which have generally been assumed to be disseminated by way of the blood stream—encephalitis viruses are an example—poliomyelitis viruses even in the severest infections reach only restricted regions of the brain and spinal cord. Several factors come into play here which have been clearly demonstrated by experimental work. First of all, the virus is fortunately unable to multiply in certain important parts of the brain, and it multiplies with some difficulty in other parts of the brain and spinal cord. This can be shown by inoculating virus directly into such areas in a susceptible animal like the monkey. Although virus will spread from such an area, for example, the visual area of the cerebral cortex, and will multiply in and destroy cells in adjacent areas, with resulting effects of inflammation, the resistant area will be unaffected.[43]

Another factor which limits the distribution of poliomyelitis in the central nervous system is an interesting one which is determined by the complicated topography of nerve fiber pathways in the nervous system. Because the virus appears to spread in the nervous system only by way of nerve fibers, it reaches only those centers which are connected directly, or indirectly, with the region into which it originally gained entry. For this reason, many regions of the brain which are capable of supporting the growth of the virus are rarely, if ever, reached by the virus and are spared its devastating effects.[43, 44] For example, most of the cerebral cortex is spared for this reason, because as a rule, the spread of virus from lower parts of the brain, where peripheral nerves enter, extends only to a relatively small part of the cerebral cortex which is known as the motor area. For this reason, it is one of the fortunate facts about poliomyelitis that intellectual functions are unaffected, in spite of severe paralysis and other symptoms, since the primary seat of these functions, the cerebral cortex, is largely spared. Of course, one might wonder why the virus does not spread from the motor area to involve the rest of the cerebral cortex with which it is connected. Apparently the reason for this is twofold. The cerebral cortex, including the motor cortex, is not very susceptible as compared with lower parts of the brain and spinal

cord, and, moreover, since the motor cortex is at the end of a series of nerve fiber pathways traversed by the virus, it is probably reached by a relatively low concentration of virus which is soon neutralized by defensive mechanisms which come into play as the disease progresses.

The centers of the brain which are most affected by the multiplication of the virus are the motor centers of the lower part of the brain—the brain stem —and the spinal cord. In the motor nerve cells, which control the movement of muscles by means of their elongated protoplasmic expansions, the motor nerve fibers, the unfortunate excursion of the poliomyelitis virus from the intestinal tract reaches a culmination of reproductive frenzy which, for a short time, produces the highest concentrations of poliomyelitis virus of which we know and as a result the destruction or temporary injury of the nerve cells in which the multiplication takes place.[45] Space does not permit a detailed discussion of the microscopical aspects of this drama, in which the virus multiplication results in destruction both of host cells and of virus. It is interesting that the rapid increase in virus concentration at the onset of the infection in the nervous tissue is followed in a day or two by an almost equally precipitous decline of virus concentration in animals which recover.[46] This precipitous fall of virus concentration cannot be explained by the destruction of all susceptible nerve cells, because in many mild infections there are numerous nerve cells still available which are apparently spared by other factors which are responsible for subsidence of the disease process.

It is these factors which I wish to discuss in my concluding remarks. For, as a biological entity, the virus cannot escape an important consequence of being one, namely, its antigenicity. As soon as multiplication of the small invading amount of virus begins, the antibody forming mechanism of the body comes into play. Unfortunately, in many instances, the mobilization of the body's immunity mechanisms is too slow to affect the outcome of rapidly fatal infections. It is probable that other more slowly progressing infections *are* favorably influenced by immunity processes occurring during the course of infection. If for no other reason, we can suspect this because of the rapidity of the decline of virus concentration in the spinal cord during the early recovery period. Moreover, we know that in a part of the alimentary tract where antibody from the blood has ready access, the throat, virus persists for only a few days in an infected individual; whereas in the lower alimentary tract, where it is apparently less readily reached by blood antibody, virus may persist for several weeks or longer in many instances.

The time-course and magnitude of specific serum antibody rise in the natural paralytic infection as well as in human beings experiencing silent infection following virus feeding, and in chimpanzees and cynomolgus monkeys infected by virus feeding, is fairly well known. The response in all appears to be essentially the same, so that we may suppose that evidence regarding the sources of serum antibody production from the experimental animal may be applied to our understanding of the process of immunogenesis in human beings. Indeed, if serum antibody production is a resultant of the three phases of virus proliferation hypothesized in this report, only indirect experimental evidence can reveal the role of each of these virus phases in serum antibody production.

First of all, it is clear from experimental work that the disease in the CNS after intracerebral inoculation results in only a poor serum antibody response [47, 48] which is, moreover, slower

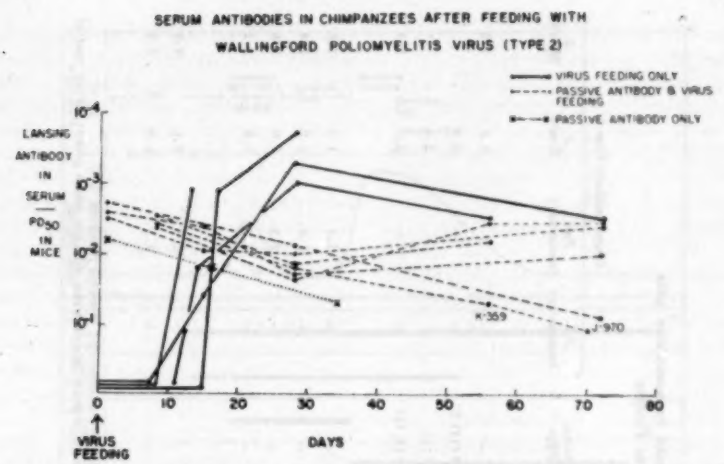

FIGURE 4—Summary of all chimpanzee experiments in which Lansing serum antibody was absent prior to onset of experiment. It can be observed that animals which were passively immunized at the time of virus feeding showed a passive decline of antibody during a period of at least 4 weeks, and that all but 2 (J-970, K-359) showed a subsequent active antibody response.

in reaching its peak than that following alimentary infection.[49] This suggests that the neural phase of virus multiplication contributes little to serum antibody production in human infections, in which the antibody levels observed in silent infections are as high and as rapid in being achieved as in paralytic infection.[11]

It is then apparently necessary only to dissociate the respective roles of the alimentary phase and the vascular phase of virus multiplication in producing serum antibody. It is clear that when both of these phases occur, as in the chimpanzees described in this report, a sharp and high serum antibody rise occurs in the acute phase of the paralytic disease, with the peak reached within a week or two after onset of paralysis. In order to assess the role of the alimentary virus phase in this response, we may study the nature of the response which occurs in similarly inoculated chimpanzees which have received sufficient passive antibody to eliminate viremia. Several chimpanzees, inoculated at the same time as those mentioned earlier in this report, may be examined with this point in mind. Each received on the day of virus feeding enough specific hyperimmune serum to produce a serum titer in the chimpanzee of about 1:500. In an animal which was given the same dose of passive antibody and was not fed virus, the declining passive antibody in time indicates the rate of decay of passive antibody, which corresponds to a straight line on a semi-logarithmic scale (Figure 4). This straight line relationship indicates that the antibody behaves as homologous antibody, with an estimated half-life of the order of 12 days, similar to that observed in human adults.[50] This curve of decline of passive antibody in the normal chimpanzee contrasts in an interesting way with the time-titer curves of the chimpanzees which were fed virus immediately after receiving passive antibody. These animals had no clinical signs or lesions in the CNS, but excreted fecal virus. They also showed an initial decline of passive antibody, but this was followed

TABLE 3

Summary of Chimpanzee Experiments Testing Effects of Passive Immunization with Hyperimmune Serum on Sequelae of Simple Virus Feeding

	Virus Used for Feeding	Clinical-Path. Findings: Fever	Clinical-Path. Findings: Day of Paralysis	Clinical-Path. Findings: Cord Lesions	Virus in Feces—Weeks * 1	2	3	4	Viremia Titer	Serum Antibody Titer †: Pre-Immunology	Post Immunology	1 Month	2 Months
Controls													
J-965	Wfd	–	–	–	+	+	+		–	–	–	3.5	2.5
J-967	"	+	17	+	+	–	–		$10^{-0.8}$ (15) ‡	–	–	3.7	
J-969	"	+	13	+	+				$10^{-1.8}$ (8)			3.0	
K-487	"	–	–	+	+	–	–		$10^{-1.8}$ (8, 11)	–	–	2.7	2.5
Immunized—active antibody response													
J-966	Wfd.	–	–	–	–	+	–		–	–	2.3	1.7	2.0
J-968	"	–	–	–	–	+	+		–	–	2.4	2.0	2.4
K-358	"	–	–	–	+	–	+		–	–	2.3	2.0	2.0
K-361	"	–	–	–	+	+	+		–	–	2.5	1.8	2.2
Immunized—no active antibody response													
J-970	Wfd.	–	–	–	–	–	–		–	–	2.7	2.1	1.1
K-359	"	–	–	–	+	–	–		–	–	2.3	1.9	1.1

* Based on intranasal inoculation of two rhesus monkeys with each specimen. + = 1 or 2 monkeys paralyzed. – = neither of 2 monkeys paralyzed.
† Based on duplicate or triplicate mouse neutralization tests with 32 PD_{50} Lansing virus. Titers are expressed as negative logs of serum dilutions which protect 50 per cent of the mice. – = no demonstrable antibody.
‡ Figures in parentheses are days when virus was isolated from blood stream.

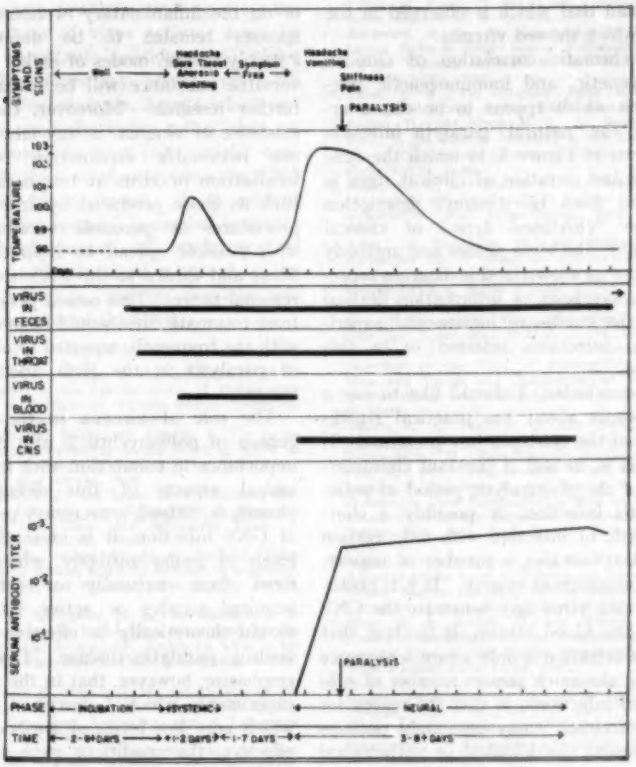

FIGURE 5—The time course of clinical, pathogenetic, and immunogenetic events occurring in "natural" paralytic infection, schematized in a partly speculative way.

by a delayed rise in titer after about one month. At 72 days their titers exceeded those which would be expected from passive decay alone by 10 to 30-fold respectively. Figure 4 and Table 3 show the antibody responses of these chimpanzees as compared with the chimpanzees which do not receive passive antibody.

Although there is a possibility that the delayed active antibody rise in these chimpanzees, as compared with the rapid antibody rise in the paralyzed animals, is correlated with a reduction of fecal virus excretion caused by the passive antibody, our evidence does not show such an effect. Another explanation of the result is that the delay in active antibody response was due to prevention of the vascular virus phase by the passive antibody. It would follow from this that it is the vascular phase which is responsible for the most rapid and highest serum antibody response, and also that the alimentary phase is capable of producing levels of serum antibody of 1:100, and over, in the absence of the vascular phase, but at a slower

rate than that which is observed in the cases which showed viremia.

A schematic correlation of clinical, pathogenetic, and immunogenetic phenomena which appear to be characteristic of the "natural" paralytic infection is shown in Figure 5, in which the time course and duration of clinical signs is adapted from Horstmann's description of the "childhood type" of clinical course.[51] The virus phases and antibody response as shown in this diagram represent a synthesis of information derived from the studies of human and experimental infections referred to in this lecture.

In conclusion, I should like to say a few words about the practical significance of the concepts just presented. If viremia is, in fact, a constant characteristic of the preparalytic period of poliomyelitis infection, or possibly a characteristic of infection with only certain "virulent" strains, a number of important consequences emerge. If it is postulated that virus may penetrate the CNS from the blood stream, it is clear that this penetration is only a rare occurrence among the much greater number of subclinical infections, so that the reason for this "accident" may be sought perhaps in unusual physiological or pathological circumstances. The possible effects of seasonal factors, of physical activity, of pregnancy, of trauma, or of concurrent infections with other agents on vascular permeability become the logical objects of suspicion and curiosity. It seems possible that the finding of Schwartzman, that cortisone increases susceptibility to poliomyelitic paralysis in ordinarily poorly susceptible species like the hamster,[52] will open the way to a rational interpretation of the role of some of the factors which appear to predispose to paralytic consequences of poliomyelitic infection. Whether the critical action of cortisone or related hormones is upon vascular penetrability, on virus multiplication in the CNS or in viscera, or on the inflammatory or immune responses remains to be determined. Possibly several modes of action of this versatile substance will be revealed by further research. Moreover, the mere existence of viremia, in any case, offers one reasonable explanation for the localization of virus at traumatic sites, such as those produced by inoculation procedures as pertussis vaccination,[53] with possible spread to injured nerve fibers and thence to the CNS along the regional nerve. This neural penetration from traumatic sites would be consistent with the frequently reported localization of paralysis in the limb affected by trauma.

The role of viremia in the pathogenesis of poliomyelitis is also of great importance in connection with immunological aspects of this disease. If viremia is, indeed, a necessary precursor of CNS infection, it is clear that low levels of serum antibody, whether derived from naturally or artificially acquired passive or active immunity, should theoretically be effective in preventing paralytic disease. I want to emphasize, however, that in the monkey experiments which I described, and in which very low levels of antibody were effective, the conditions were carefully controlled in regard to dose of antibody, time of administration, and time of exposure. These variables will have to be intensively investigated in human beings before we can deal effectively with the problem of immunoprophylaxis in human beings. Until then the indiscriminate use of scarce materials such as human gamma globulin will hamper rather than aid our attempts to find out whether immunoprophylaxis is possible or is practical. We *must* first find out how much is necessary in man, when to administer it, and who is to receive it, or else there will be a tragic waste of this potentially valuable material.

Finally, this discussion makes it clear that among the points of attack of pos-

sible chemoprophylactic agents the blood phase of virus activity must be given important consideration, along with the alimentary phase and CNS phase. For example, agents which act directly upon the virus, rather than on its substrate in host cells, might conceivably block viral entry into the CNS from the blood stream. It is evident that further research is needed to establish the frequency of occurrence of viremia in the incubation period of the human infection, and its possible role in the invasion of the CNS.

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First Dental Board Examination

The first certifying examination was given by the American Board of Dental Public Health in St. Louis, Mo., on September 12–13, 1952, as a result of which nine dentists have been certified by the Board: Drs. John E. Chrietzberg, H. Shirley Dwyer, John T. Fulton, Norman F. Gerrie, Thomas L. Hagan, William P. Kroschel, Frank E. Law, George A. Nevitt, and Carl L. Sebelius.

A second certifying examination will be given by the American Board of Dental Public Health in September, 1953, in Cleveland, Ohio. Candidates for examination under the waiver clause of the Board's Eligibility Requirements for Examination and Certification must submit applications to the secretary not later than January 1, 1953.

Information and application forms may be obtained from the secretary, Dr. Philip E. Blackerby, Jr., at 250 Champion Street, Battle Creek, Mich.

The Incubation Period of Poliomyelitis

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A KNOWLEDGE of the average incubation period of a disease and the distribution of frequencies around that average has more than academic interest to the epidemiologist, and it sometimes assumes medicolegal importance. In the determination of probable sources of infection and modes of spread it is often necessary to rely heavily on this information. Unfortunately, there is a dearth of reliable information about the incubation period of many diseases, including poliomyelitis. This is due to the difficulty of determining when infection takes place; the infrequency of secondary cases in households; the vagueness of onset of some cases, and the dromedary character of others. Horstmann and Paul[1] have also emphasized the great variability of the virus in various hosts under different conditions. They do not believe that a more exact estimate can be made than to place the observed limits between 3 and 35 days, with many cases developing after a 4- to 10-day period.

In a study of the distributions of incubation periods of a number of diseases,[2] it was shown that they tend to be distributed in a logarithmic normal fashion. A simple method for determining the two parameters of this curve, the "estimated median" and "dispersion factor," has been described (see appendix).

Twenty-nine cases of poliomyelitis occurring in a single outbreak were investigated by Casey.[3] These cases occurred in an inaccessible rural area where transportation was difficult and contacts consequently few. Each was the initial case in a neighborhood and had had a single brief exposure to a prior case, so that the incubation period could be estimated, although, of course, the possibility that any one of these cases was infected from a different source cannot be excluded. Analysis of the distribution of presumptive incubation periods in these 29 instances gives an estimated median of 11.7 days and a dispersion factor of 1.55.

It has been demonstrated by a number of workers[4-8] that tonsillectomy performed during poliomyelitis outbreaks leads to an increased hazard of bulbar poliomyelitis during the month following the operation. The usual ratio between bulbar cases and the spinal form of the disease is sharply altered, bulbar cases becoming relatively more numerous. It is not clear whether there is any increased hazard of spinal or nonparalytic forms under these circumstances.

On the hypothesis that tonsillectomy provides a portal of entry for the poliomyelitis virus, that infection takes place at the time of operation or very shortly thereafter, and that the incubation period follows the same pattern as in naturally acquired infection, one would expect the distribution of intervals from operation to onset to be a log normal curve with parameters perhaps similar to those cited above. If, however, there were no relationship between the two events, one would expect the intervals to be uniformly distributed over the period of one month post-tonsillectomy, rather

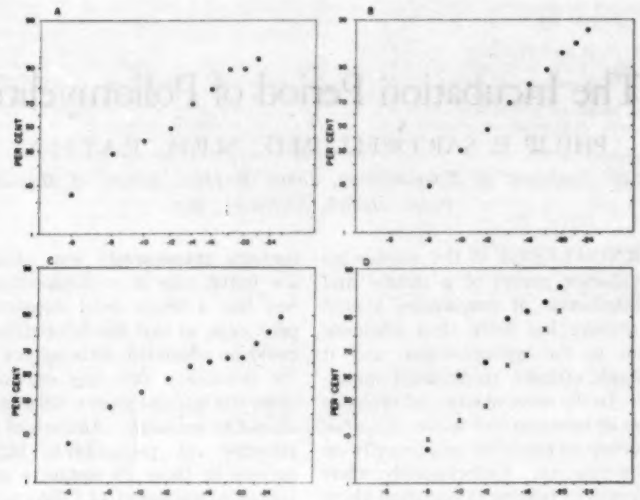

FIGURE 1—Graphs on normal probability paper of cumulative distributions, as percentages; time scale on abscissae is logarithmic.

A. Incubation periods in 29 paralytic cases of poliomyelitis, estimated by Casey.[5]

B. Intervals between tonsillectomy and onset of bulbar poliomyelitis in 54 cases (combined data of several studies.[4-8])

C. Intervals between tonsillectomy and onset of spinal poliomyelitis in 28 cases (from the same studies as (B)).

D. Intervals between feeding poliomyelitis virus to experimental animals and onset of paralysis. Key: "solid circles" 36 cynomo'gus monkeys; x x 12 chimpanzees (Bodian [9]).

than concentrated at any particular point in time. (If most of the tonsillectomies were done just prior to an epidemic, this would not be true.)

The post-tonsillectomy cases reported by 5 groups of investigators (references 4–8) were separated into (a) bulbar or bulbar-spinal and (b) spinal or nonparalytic cases. There appeared to be no reason from analysis of each separate series why they should not be combined in order to give more stable values. When this was done, it was found that the curve of the 54 bulbar and bulbospinal cases was very close to a logarithmic normal distribution, with a median of 12.5 days and a dispersion factor of 1.37. (Figure 1 and Table 1). The distribution of the 28 spinal or nonparalytic cases was more irregular, with median and dispersion factor closer to the values to be expected if the events were unrelated.

The closest experimental approach to human poliomyelitis is by feeding poliomyelitis virus to other primates. Bodian [9] has reported the largest number of such observations, where the animals were normal controls of others that had been immunized. Twenty-four cynomolgus monkeys developed paralyses after a 3-day feeding of a suspension of spinal cord infected with Mahoney virus. The estimated median incubation period to onset of paralysis was 11.4 days with a dispersion factor of 1.20, assuming infection to have taken place on the second day of virus ingestion.

TABLE 1

Summary of Distributions and Parameters of Incubation Periods of Poliomyelitis Following Exposure, Following Tonsillectomy, and in Cynomolgus Monkeys After Feeding Virus

Reported By	*Description of Series*	*No. of Cases*	*Distribution (Agreement with Log Normal)*	*Parameters*	
				Estimated Median Days	*Dispersion Factor*
Casey [3]	Paralytic human cases in a single epidemic; incubation period estimated from fact that the patient was the initial case in the neighborhood and developed polio following a single short visit to a prior case.	29	good	11.7	1.35
Aycock and Luther [4]	Cases reported in Massachusetts and Vermont, 1927–1928 with history of tonsillectomy.	16	fair	13.1	1.30
Eley and Flake [5]	Consecutive admissions to hospital with history of tonsillectomy within past 30 days (includes 3 of cases in Aycock's series).	25	fair	14.4	1.52
Anderson, *et al.*[6]	Cases developing within one month after tonsillectomy, Minnesota, 1946.	19	good	12.5	1.39
Combined Series	Data of Aycock, *et al.*, Eley, Anderson, *et al.*, Fischer, *et al.*, and Stillerman combined. All cases of bulbar or bulbospinal polio occurring within 30 days after tonsillectomy.	54	excellent	12.5	1.37
Combined Series	Data of same authors combined. All cases of spinal or nonparalytic polio occurring within 30 days after tonsillectomy.	28	fair	13.8	1.86
Bodian [9]	Interval between feeding Mahoney virus to cynomolgus monkeys and onset of paralysis.	24	fair	11.4	1.20
British Ministry of Health [10]	Epidemic in Broadstairs, England (assuming common exposure on October 2, 1926).	63	good	12.2	1.55

(Symptoms are seldom noted prior to paralysis.) Twelve chimpanzees that came down after oral infection (4 different virus strains were involved in these experiments) showed an estimated median incubation period of 14.0 days with a dispersion factor of 1.32.

Thus, the observations on "natural" human poliomyelitis, those on post-tonsillectomy bulbar and bulbospinal poliomyelitis, and those on the experimental disease are in substantial agreement.

If we accept these figures as reasonably characteristic of the disease we may answer the question of how, after a group of susceptibles have been simultaneously exposed to some common vehicle of infection, the resulting cases would be distributed in time. Figure 2 shows the hypothetical distribution of 100 such cases, assuming common infection on day "0" and a median incubation period of 12 days with a dispersion factor of 1.5. Nearly all cases would have their onsets during a span of 21 days, from day 4 through day 24, and 80 would occur in a 14-day period. Chance effects would tend to distort the curve and might either curtail or prolong it. Differences in the strain of virus and route of infection might affect the median somewhat, but it is thought by analogy with other diseases [2] that they would probably not greatly alter the degree of variation around it. Variation in dosage has presumably already exerted its influence on the data from which the median and dispersion factor were derived.

The duration of the usual poliomyelitis epidemic, in which the virus is presumably spread from person to person and where most of the infections are inapparent, is not easy to measure objectively. The reason for this difficulty is the impossibility of defining most epidemics in time or place. With respect to time, there is a tendency for sporadic

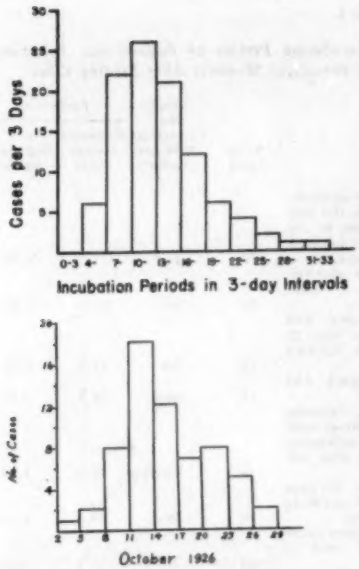

FIGURE 2 — Upper: theoretical distribution of incubation periods of 100 cases of a disease with median incubation period 12 days and dispersion factor 1.5.

Lower: distribution of onsets of paralytic poliomyelitis in Broadstairs, England, October, 1926, by 3-day intervals.

cases to occur at either end of the epidemic curve, and with respect to place, epidemics are seldom limited to a single community and never sharply circumscribed, so that it is not possible to state precisely what population is involved. In small communities (under 20,000 population) as few as 3 or 4 cases may constitute a large epidemic in terms of rates, but with so few clinical cases no reliable estimate of epidemic duration can be made. About all that can be said is that in the large epidemics reported in the literature, nearly all of which took place in large cities, the 80 percentile range has been from 7 weeks upwards and often about 10 to 12 weeks. This may correspond to some 6 or 7 "generations" of virus passage if we accept 12 days as the incubation period.

The only common vehicle epidemics reported in the literature for which the evidence is at all satisfactory are a few supposedly milk-borne ones. Even here the evidence for milk as a vehicle, while substantial, is not entirely convincing. Rather explosive epidemics do occasionally occur in communities, however, and it would be useful to have a means of estimating whether they could, on the basis of the epidemic curve alone, be explained as caused by a single simultaneous exposure of the population. If so, the search for a common vehicle should be intensified.

As an illustration, the historic Broadstairs epidemic of 1926 will be cited. This English town of about 16,000 population experienced an explosive poliomyelitis epidemic of over 60 cases which was carefully studied by McNalty [10] and Watts.[11] and subsequently by Aycock.[12] Aycock considered the epidemic milk-borne, but some British investigators are said never to have accepted this view.[13] In taking the history of a case, some contact, direct or indirect, with a prior case could usually be found. Even in instances where this contact had preceded onset by only one to three days it was assumed that the disease had been spread by such association.

In Figure 2 the epidemic curve for the Broadstairs epidemic secured from the annual report of the chief medical officer of the Ministry of Health [10] is drawn below the hypothetical curve based on our assumed parameters; the similarity of the 2 curves is striking. Eighty per cent of the cases in the hypothetical series have their onset within a span of 14 days, while in the Broadstairs epidemic the same proportion occurred over a period of 13 days (from October 10 to 23). This appears to provide strong support for the view that, whatever the vehicle may have been,

there was some common vehicle and infection did not spread from person to person in any considerable number of instances.

DISCUSSION

It has long been accepted by epidemiologists that an explosive epidemic is more likely to prove to be due to a single common exposure to some vehicle than a more protracted epidemic. The word "explosive" is, however, a relative term, and what we consider explosive depends on the disease in question. A common vehicle epidemic of serum hepatitis such as that described by Parr [14] would run its course in a much longer period of time than the usual epidemic of influenza transmitted from person to person, owing to the difference in incubation period of the two diseases. Better indexes than we have had are needed in order to assess the abruptness of an outbreak and the likelihood of its being due to a common infection. The present paper attempts to provide such an index.

If one selects 12 days as the best estimate of the median incubation period of poliomyelitis and 1.5 as the dispersion factor, it follows that the range of one standard deviation in either direction, which will encompass about 68 per cent of observations, is from 8 to 18 days; two standard deviations, which encompass about 95 per cent of observations, will cover a range from 5 to 27 days. The 80 percentile range is from 7 to 20 days.

It is important to note that Aycock and Luther [15] in 1929 studied this same question and utilized similar kinds of data (milk-borne outbreaks, cases following tonsillectomy, cases with single known contacts, and experimental poliomyelitis). They stated of the human disease: "In all cases where the time of exposure can be set within narrow limits the apparent incubation falls within a period of from 6 to 20 days." In the present study, for which somewhat more abundant data were available, the 80 percentile range is found to be practically identical with their estimate.

SUMMARY

1. Evidence taken from the literature on poliomyelitis has been presented which shows that the median incubation period is close to 12 days, the usual range being from about 7 to 20 days. This is based on limited epidemiologic data and intervals from tonsillectomy to onset of bulbar poliomyelitis; these results are in agreement. Experiments in which poliomyelitis virus was fed to cynomolgus monkeys and chimpanzees also yield results consistent with these.

2. The use of this knowledge in deciding whether an epidemic was produced by person-to-person transmission of the virus or by a single common exposure to a vehicle of dissemination is discussed. The epidemic in Broadstairs, England, is taken as an illustration and is considered to fit the common vehicle pattern rather well.

APPENDIX

Method of Calculating Parameters of Distributions

If the presumed date of infection is known, or can be estimated, frequencies may be grouped by appropriate intervals measured from that date (in poliomyelitis, 3-day intervals are satisfactory). Cumulative frequencies and cumulative percentages are then determined. These cumulative frequencies are to be thought of as extending up to the lower limit of the next time interval. Thus, if the cumulative frequency of poliomyelitis onsets for the interval October 8 through October 10 (days 6 through 8 from an assumed exposure date, October 2) is 11 cases, or 17.5 per cent, this really represents the cumulative distribution up to day 9. Actually, since exposure might have taken place at any time on day 0, but the probability centers around midday, it is more correct to say

Dates of Onset of Paralytic Poliomyelitis in Broadstairs, 1926 (Determined from Published Diagram). Computations Required for Curve-fitting, Assuming Exposure to Have Taken Place on October 2, 1926

Date of Onset (3-day Intervals)	Upper Limit of Interval from Oct. 2 + 0.5 day	Logarithms of Values in Last Column	Case Frequency	Cumulative Frequency	Cumulative Per cent
Oct. 2– 4	2.5 days	0.400	1	1	1.6
5– 7	5.5 "	0.740	2	3	4.8
8–10	8.5 "	0.929	8	11	17.5
11–13	11.5 "	1.061	18	29	46.0
14–16	14.5 "	1.161	12	41	65.1
17–19	17.5 "	1.243	7	48	76.2
20–22	20.5 "	1.312	8	56	88.9
23–25	23.5 "	1.371	5	61	96.8
26–28	26.5 "	1.423	2	63	100.0
			63		

that the cumulative percentage up to day 8.5 rather than day 9 is 17.5 per cent.

These times are converted into logarithms and the distribution is plotted on normal probability paper on which a scale of equal logarithmic intervals has been marked. For this purpose the ruling designed by Dr. Joseph Berkson of the Mayo Clinic, obtainable from the Codex Book Company (Codex No. 32,451) is especially well suited. If the distribution of points is approximately linear, a straight line is fitted by inspection. The intercept of this line with the 50 per cent ruling gives the "estimated median" time in logarithms on the time axis; the interval between the intercept with the +1 or −1 normal deviate and the 50 per cent point gives the logarithmic standard deviation. (It is a little more accurate to measure the interval from a +1 to a −1 normal deviate and divide by 2.) Antilogarithms of these two values represent the parameters referred to in this paper.

The computation is illustrated above, using the Broadstairs epidemic.

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A Comparison of the Incidence of Phases I and II of *Shigella sonnei* in Cultures from Acute Infections and Carriers*

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A PREVIOUS report [1] described the unusual antigenic activity of *Shigella sonnei* when in phase I as compared with an almost complete lack of this property in phase II and R forms. This antigenicity was demonstrated by vaccinating mice and subsequently challenging them with living cultures in mucin.

The practical value of this finding in human vaccination against this form of bacillary dysentery would depend largely upon the relative commonness of phase I in causing this disease, since less cross protection was found experimentally between the phases of this species than between *S. sonnei* and some of the Flexner types.

This present study includes cultures from 100 individuals yielding *S. sonnei*. Twenty were from carriers, chiefly people who had recently had the disease, and 80 from acute cases. Six previously studied strains were used as reference cultures and for preparation of antisera. The cases and carriers were from 4 different localities, but the same technic for isolation and identification was used in all.

Material was taken on rectal swabs and was spread, by means of the swab, on bile salts citrate (SS) agar plates. This was done immediately with the carriers, and, with the cases, as soon as the swabs could be transported to the laboratories. The plates were examined after 24 and 48 hours' incubation at 36° C. Colonies were picked from each plate to Kligler's agar slants for further study. These were transferred to various differential culture media, tested for agglutination with phase I, phase II, and R antisera, and finally titrated for virulence in mice.

In 25 of the 80 cases, and in 9 of the 20 carriers, the original SS plates inoculated directly with the rectal swabs were available for study. These were examined with a colony microscope and the proportionate number of phase I and phase II colonies recorded in percentage. Definitely R colonies were not seen on any of these primary plates.

Of the 25 plates from cases, 23 showed 100 per cent of colonies typical of phase I (round, smooth, raised, and shining), and the remaining 2 showed more than 90 per cent of phase I. Of the 9 carriers, 8 showed 80 per cent, or more, of colonies typical of phase II (also round and raised, with a somewhat beveled edge and a beaten copper appearance), 4 of them yielding more than 90 per cent of this form.

It is well known that, although phase I of *S. sonnei* grows well on SS agar, this

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is a poor medium for phase II and R forms. Hence, it might be considered that the reason that only phase I colonies were found on the plate cultures from acute cases was because the II and R organisms were inhibited. Some such inhibition very likely did occur, but the finding of 80 per cent, or more, of colonies with phase II appearance on the carrier plates, on the same medium, made by the same laboratories, and, in some instances, on the same day, seems definitely to indicate a great preponderance of phase I in the acute cases and of phase II in the carriers.

After the percentages of the I and II colony forms were read on these primary plates, at least 6 colonies were picked from each for direct slide agglutination with absorbed phase-specific antisera representing I, II, and R, each colony being large enough to be tested with all 3. In picking these colonies, an attempt was made to choose a proportionate number of those appearing to be I or II from plates where both forms appeared. In only one instance was a phase I colony from a case of clinical dysentery agglutinated as much as 1 plus by a phase II serum, whereas all were agglutinated by the phase I serum as much as 3 plus to 4 plus. With the colonies from the carrier plates a very different situation was found. These colonies were mixtures of phase I and phase II cells in different proportions. In a few instances the colony growth was agglutinated equally by I and II sera, but in the majority of cases either I or II would be definitely predominant, the predominant phase determining the appearance of the colony. Of the 54 colonies studied thus from the 9 primary plate cultures from carriers, II was predominant in 35, or approximately 65 per cent, although many degrees of variation occurred.

The probability that no 2 colonies are exactly alike in phase composition was kept in mind in choosing colonies from these plates to transfer to Kligler slants for further study. The only precaution that could be taken was to choose those that were as representative of the culture as was possible.

Whereas original plates were available from 25 acute cases and 9 carriers, the remaining 66 strains were received on Kligler's agar slants. These were first generation cultures of colonies picked directly from the original plates by workers in 3 other laboratories and were usually between 24 and 48 hours old when received. The procedure followed with these first generation cultures was the same as that used for the Kligler slant cultures which were made from the original plates. All were replated. Several differential media were tried for this replating: MacConkey's, EMB, and Endo. With all 3 of these media colony appearance varied greatly. The phase II colonies were less raised and often had wavy margins on MacConkey's and EMB, whereas they seemed denser and more opaque on Endo. A plain meat infusion agar was finally adopted as it gave clear differentiation of colony phase and no inhibition of any form.

These plates were inoculated from the first Kligler slants. After incubation for 18 hours, the proportion of each colony form was recorded in percentage. Of the 23 strains from clinical cases in which the original plates gave 100 per cent of phase I colonies, no replated strain showed less than 80 per cent of phase I, 11 showed more than 90 per cent, and 4 still yielded 100 per cent. In the 55 case strains received by us on Kligler's agar slants, all had more than 80 per cent phase I colonies, and 14 had at least 90 per cent phase I, figures comparable to those obtained by replating the cultures obtained from the original plates. On the other hand, all carrier strains yielded at least 80 per cent of phase II, and 2 of them showed an appreciable number of R colonies.

A phase I and a phase II colony, if present, were picked from each of these replated strains to Kligler's agar slants and to plain broth. The agar slant growth was used for agglutination in phase sera and for preparation of subcultures in various differential media to confirm identification of these cultures, now 200 in number. The broth cultures were observed for stability in suspension and a fresh broth culture prepared from them for virulence testing in mice.

Slide agglutination proved to be more informative than the regular tube method. Colony appearance, agglutination, and stability in broth were in agreement in all colonies chosen as of phase I. Pure phase I cultures did not cross agglutinate with II and R sera. Colonies chosen as phase II were usually stable in broth for a few hours at least, but the serological differentiation between II and R was not always clear-cut. R cultures always settled rapidly in broth and I cultures were always stable; phase II needs to be studied further in this respect.

Subcultures were made from the phase I and phase II cultures of all strains into the following media: glucose, lactose, mannitol, rhamnose, sucrose, and xylose broths with brom-thymol blue as indicator; litmus milk, broth for indol and gelatin. All gave reactions characteristic of *S. sonnei*, but not at the same time intervals. Although fermentation of sucrose and lactose was usually delayed until the second or third week, one strain produced acid in sucrose, and 3 in lactose on the first day of incubation. With these latter 3 strains a few red colonies appeared on the SS agar plates which fermented lactose broth within 24 hours. These rapid lactose-fermenting colonies were completely typical in all other respects and were proved to be specifically of phase I; other phase I colonies from these same plates produced no acid until the eighteenth and twenty-first days. Although the rate of fermentation seems to be a characteristic of the individual strains of *S. sonnei*, there is apparently no relation between this variation and phase occurrence.

Strains from all of the 100 individuals —that is more than 200 cultures when both phase I and phase II are included —were titrated for virulence in mice, using 4- to 5-hour broth cultures and making culture dilutions in mucin. Proved phase I cultures invariably were found to be of high virulence for mice when injected intraperitoneally and the LD_{50} was remarkably constant. As a rule, the LD_{50} was from 10 or less to 100 bacteria in 1 per cent mucin. For phase II cultures 3 per cent mucin was needed and the LD_{50} was more variable, ranging from 2 million to 5 million bacteria. Few R colonies were encountered up to this point, and the virulence tests did not include these. Mice of CFW strain weighing 15–16 grams were used, 4 for each dilution from 10^{-3} to 10^{-9}. They were given 1 ml. of inoculum intraperitoneally and were kept under observation for 4 days.

Care was taken to do these virulence titrations as quantitatively as possible. In the experience of the authors phase II of *S. sonnei* has been found to multiply more rapidly in broth than phase I; hence, a 4- to 5-hour broth culture of phase II contains more organisms and forms a denser suspension than a 4- to 5-hour culture of phase I, even though both have received a similar inoculum. For this reason the young broth cultures were adjusted to the same density (approximately one billion cells per ml.) before the dilutions for virulence titration were made in mucin. This suspension of approximately one billion bacteria was considered 10^{-1}, since the original 4- to 5-hour culture was much greater than this. Tenfold dilutions were made. At the end of the titration 0.1 ml. of 10^{-8} and of 10^{-9} culture dilutions were inoculated into tubes of semi-solid agar medium and the number of

TABLE 1

Correlation Between Virulence and Phase in S. sonnei

Strain	Stability in Broth	Concentration of Mucin, Per cent	LD_{50} Dilution 1 ml.	LD_{50} Bacterial Count *	Colony Phase on Agar Plate, Per cent I	Colony Phase on Agar Plate, Per cent II	Slide Agglutination with Absorbed Sera I	Slide Agglutination with Absorbed Sera II	Slide Agglutination with Absorbed Sera R
32_1	+	1	10^{-9}	20	90	10	++++	−	−
31_{2a}	0	3	10^{-9}	25,000,000	2	98	+	++++	++
33_{1b}	+	1	10^{-9}	11	80	20	++++	−	−
33_{red}	+	1	10^{-9}	8	80	20	++++	−	−
34_2	0	3	10^{-1}	50,000,000	0	100	+	++++	++
34_4	0	3	10^{-5}	2,500,000	0	100	−	++++	+++
35_1	+	1	10^{-9}	40	60	40	++++	+	−
36_2	0	3	10^{-5}	2,500,000	0	100	++	++++	++
37_1	+	1	10^{-9}	10	90	10	++++	−	−
37_2	0	3	10^{-4}	25,000,000	0	100	−	++	+++
37_3	+	1	10^{-8}	50	60	40	+++	−	−
39_2	0	3	10^{-8}	18,000,000	0	100	−	+++	+++
40_1	+	1	10^{-9}	19	80	20	++++	−	−
40_2	0	3	10^{-4}	13,000,000	0	100	++	++++	+
47_1	+	1	10^{-9}	3	90	10	++++	−	−
51_1	+	1	10^{-9}	7	90	10	++++	−	−
52_1	+	1	10^{-9}	9	95	5	++++	−	−
52_2	0	3	10^{-8}	17,000,000	10	90	−	++++	+
53_1	+	1	10^{-9}	10	85	15	++++	−	−
53_2	0	3	10^{-5}	3,000,000	0	100	−	++++	+++
54_1	+	1	10^{-8}	100	80	20	++++	−	−
54_7	0	3	10^{-5}	1,500,000	0	100	−	++++	+
55_1	+	1	10^{-9}	2	80	20	++++	−	−

* Based on count of colonies in 1ml. of 10^{-9} dilution.

colonies counted after 16- to 18-hours' incubation to check the approximate number of organisms in the LD_{50} dose. At this 16- to 18-hour period the colonies are discrete and easily counted in these high dilutions. The phase I colonies are fluffy and downward spreading, whereas the phase II colonies are compact and round. This difference is clearly shown in photographs published by Pittman and Davis to illustrate the same phenomenon with *Hemophilus influenzae* type and nontype specific organisms.[2]

As soon as the titration dilutions were made the original 10^{-1} broth culture was plated on MacConkey's agar so that the percentage of phase I or II organisms present at the actual time of inoculation could be known. Table 1 presents a sample study with 3 of these strains.

Reference to this table shows that stability in broth, virulence, characteristic colony appearance, and serological specificity are characteristics of all phase I cultures. Besides having very low virulence, none of the phase II cultures included in this table were consistently stable in broth.

There is a general impression that cultures of *S. sonnei* dissociating rapidly tend to stabilize as phase II. Since phase II organisms multiply more rapidly than phase I such a tendency for cultures of *S. sonnei* to "go over" into phase II seems logical. Not all phase II strains are unstable in broth; during the earlier period of this study a number of relatively stable cultures were encountered. In this present study most of the phase II strains had become unstable in broth and were often cross agglutinated to some extent by R antiserum. Clear-cut differentiation between phase II and R forms of *S. sonnei* has sometimes been obscure, although typical phase II colonies were frequently met and could be usually clearly distinguished from the thinner, irregular, and coarsely granular forms usually associated with roughness. Many of these true phase II cultures were not agglutinated by an R antiserum absorbed

with II. The agglutination results in Table 1 suggest the presence of a number of R organisms in the phase II cultures.

These 100 strains of *S. sonnei* were isolated during the summer of 1949 and were studied as received. After the described procedures, these cultures, phase I and phase II from each strain, 200 all together, were kept by weekly transfer in plain infusion broth. At the end of this preliminary study all were dried from a frozen state and stored.

During 1951 a restudy of these cultures was begun. Broth cultures were plated on either plain or MacConkey's agar, the proportion of different forms of colonies recorded in percentages as before, and phase I and phase II colonies chosen from the respective cultures and examined for stability in broth, agglutination, and virulence for mice.

The majority of the cultures now yielded a large number of R colonies, the percentages generally being in direct proportion to the length of time of routine laboratory maintenance. For example, the last strains to be received and studied had markedly fewer R colonies than those studied first and set aside. This was to be expected as no precautions had been taken to prevent this change. The interesting point in this situation was that typical phase I and phase II colonies could usually be found, sometimes in abundance, sometimes after search, and that study of these showed that they maintained their characteristics. A phase I colony, picked from a plate almost entirely R, was stable in broth, specific in agglutination, and was highly virulent for mice, as few as 10 organisms in 1 per cent mucin usually constituting LD_{50}. Phase II and R colonies were of very low virulence, even with higher concentrations of mucin.

SUMMARY

In this study of *S. sonnei*, rectal swab cultures from 100 individuals have been studied: 80 from acute infections, and 20 from carriers.

In clinical dysentery, caused by *S. sonnei*, phase I of this organism was found to be overwhelmingly predominant, primary cultures showing from 90 to 100 per cent colonies of this form. Agglutination of these was by Phase I antiserum only.

Primary cultures from carriers, on the other hand, showed very few phase I colonies, but a preponderance of phase II, usually 80 per cent, or more.

Individual colonies from carrier plates showed, on agglutination, various combinations of phase I and phase II organisms.

No R colonies were seen on these earliest cultures.

Pure phase I cultures had shining smooth colonies, were stable in broth, specific in agglutination, and of very high virulence for mice.

Phase II cultures had raised beveled edged colonies with a beaten copper appearance and tended to be less stable in broth, and less specific in agglutination. They were invariably of low virulence for mice.

During routine laboratory maintenance, phase I cultures tended to go over into phase II, and the large flat form of R colony often became predominant. These R forms, always unstable in broth, had very low virulence for mice.

Even though phase I organisms were often few in the older cultures, pure colonies of these retained specific characteristics and were as virulent for mice as those on the original plates from human patients.

Evidence indicates that it is phase I of *S. sonnei* that is of clinical and immunological importance.

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Study of Ninety-Eight Communities Fluoridating Their Communal Water Supply

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DENTAL caries creates a health problem of considerable magnitude because of its high rate of prevalence and the numerous sequelae that result from its neglect. Even the worst skeptic would not deny the far-reaching consequences—systemically—of an impaired masticatory apparatus. Scientific studies, rather than personal experience and opinions have proved, without doubt, the need for a healthy dentition.[1-3]

Dental caries is one of the chronic diseases yet to be controlled and is perhaps the most prevalent of all diseases to which mankind is subject. Until very recently, the best protection against tooth loss from decay was the technical intervention of the dentist. A partial control of this chronic disease has now been found—the fluoridation of communal water supplies. "Of all the preventive methods in use, including toothbrushing, restriction in the consumption of concentrated sugar, and topical application of sodium fluoride, fluoridation (of public water supplies) offers the greatest hope for preventing caries because of its easy application for large numbers of people and its relatively low cost." [4]

In certain infectious diseases, the illness can be treated, the vector controlled and the individual prevented from developing the disease even when exposed. However, with dental caries, the disease cannot be effectively treated, since dental defects are accumulating at a rate four to five times faster than they can be corrected by presently available dental personnel. The vectors, in this case the oral flora, in part at least, have escaped adequate control, and disease prevention had been unknown. Until recently, no effective means of control at any of these points has been applicable to dental decay.

Fluoridation meets part of this vast problem by reducing the incidence and, therefore, the prevalence of dental decay and brings it within treatable bounds; fluoridation thus controls the vector and prevents the disease.

With the tremendous backlog of work to be accomplished it seems only logical that every dentist should devote a great deal of his time to preventive dentistry—in his community—as well as in his office. In so doing, he, as well as the profession, will not only stay abreast of the present dental situation but will be able to reduce the enormous backlog of patients as soon as possible. In this way the profession will provide service for all rather than for only a few.

Since the fluoridation of public water supplies is dentistry's reply to a disease that has too long avoided prevention, each private dental practitioner should become thoroughly familiar with its many facets. In this manner, he may

take the lead in his community in making fluoridation a reality. By knowing the experience of communities of similar size, positive steps may be undertaken to ascertain cost, method, approach, etc., in bringing fluoridation about.

With this in mind, a survey was undertaken in January, 1952, for the purpose of obtaining experience data of those communities which had already inaugurated programs for the fluoridation of public water supplies. Questionnaires were addressed to 127 communities fluoridating their water supplies in 31 states as of October 15, 1951.[5] Of this number, 98 replies were received from 30 states representing 77.1 per cent returns.

The following questionnaire was sent:

1. Name of reporting city.
   Population supplied with fluoridated water.
   Number of gallons of water used daily (millions).
   Date fluoridation began.
2. What chemical is used as the source of the fluoride ion?
3. Have you experienced difficulty in getting delivery of this chemical?
4. What is the range of fluoride dosage (ppm)?
5. How is the cost of fluoridation financed (from water revenue, health department funds, etc.)?
   a. What reasoning was applied in this decision?
6. In fluoridating your communal water supply was this principle submitted to a public referendum, or was the decision of dental, medical, and public health officials accepted as such?
7. What complaints, if any, have been received following fluoridation?
8. Remarks.

Of the 98 communities replying to this questionnaire:

22 were of less than 5,000 population
22 were between 5,000 and 10,000 population
35 were between 10,000 and 50,000 population
12 were between 50,000 and 100,000 population
7 were over 100,000 population

Communities as small as West Concord, Minn., with a population of 780 residents and Soldier's Grove and Edgar, Wis., with resident populations of 800 each, found fluoridation to be economically feasible. Even such small communities also recognized its safety and adequacy. (Safety, because not enough water containing a one ppm of fluoride could be drunk to cause the least harmful effects; adequacy, because every child—and there is some demonstrable evidence for adults, too—regardless of social, educational, or economical status would benefit from it.)

The earliest fluoridation program, in this reporting group, was begun in January, 1945, at Grand Rapids, Mich., the most recent at New Rochelle, N. Y., (October 8, 1951). Of the 98 reporting:

Fluoridation Programs Started

Number of Towns	*Year*
3	1945
2	1946
2	1947
3	1948
13	1949
24	1950
51	1951

In reply to question 2 of the questionnaire: "What chemical is used as the source of the fluoride ion?"

53 reported using Sodium Fluoride (NaF)
41 reported using Sodium Silico Fluoride (Na_2SiF_6)
3 reported using Hydrofluosilic Acid (H_2SiF_6) (Greensburg Ky., Lisbon and Avon Lake, Ohio)
1 reported using Hydrofluoric Acid (HF) (Madison, Wis.)

In reply to question 3 of the questionnaire: "Have you experienced difficulty in getting delivery of this chemical?"—All 98 communities reported no difficulty in obtaining the particular chemical used. However, remarks such as the following have been included by an isolated few:

A contract was made prior to starting the program. Delivery has been satisfactory.

Some difficulty was experienced early in our program. We are now able to maintain approximately a four months' supply.

None to date; more universal fluoridation of water supply may present difficulty until chemical companies increase their capacities.

No, a year's supply was brought before apparatus was ready.

Yes, at first, but it is now available.

In reply to question 4 of the questionnaire: "What is the range of fluorine dosage (ppm)?"—Replies to this question varied from 0.5 ppm for the summer months in the southern states, e.g., DeKalb County, Georgia, to 1.4 for the winter months in the northern states, e.g., Northwood, N. D. In other words, in areas where the environment stimulates an increased water intake it may be necessary to reduce the concentration of fluorides to as little as 0.5 ppm. On the other hand, where relatively little water is consumed, as in the extreme northern part of the country, the optimum concentration may be as high as 1.4 ppm.

Therefore, climatic conditions are of primary consideration in determining the desired quantity of fluorides to be placed in communal water supplies since climatic conditions play a very decided part in determining the quantity of water drunk daily.

The following 12 communities are listed to demonstrate the relationship between annual temperatures and ppm of fluorides in use without producing dental fluorosis or other untoward effect:

City	*Annual Mean Temperatures*	*Ppm. of Applied Fluorides*
Northwood, N. D.	40.0	1.0–1.4
Madison, Wis.	46.2	1.0–1.2
Grand Rapids, Mich.	48.1	1.0
Aurora, Ill.	48.2	1.2 (natural)
Wheeling, W. Va.	50.6	0.9–1.2
New Rochelle, N. Y.	52.6	1.0–1.1
Indianapolis, Ind.	52.7	0.8–1.2
Charlotte, N. C.	60.8	0.6–1.1
Tuscaloosa, Ala.	63.6	0.7–1.0
Columbus, Miss.	64.4	0.8–1.0
DeKalb County, Ga.	68.4	0.5–1.0
Gainesville, Fla.	69.4	0.8

Although annual mean temperatures, as listed above, will give some indication as to optimum level of fluoride concentration, consideration should be given to mean minimum and mean maximum temperatures.

In reply to question 5 of the questionnaire: "How is the cost of fluoridation financed?" Of the 98 reporting communities:

88 reported fluoridation financed from water revenue
6 reported fluoridation financed from general funds
3 reported fluoridation financed from health department funds
1 reported fluoridation financed from "other"

In reply to question 5a of the questionnaire: "What reasoning was applied in this decision?"—The following replies were received in connection with reasoning behind financing fluoridation from water revenue:

Tuscaloosa, Ala.—"Considered most logical means of financing this project."

Evanston, Ill.—"Providing a safe drinking water supply is essential for the protection of the health of the public. In most municipalities in this country water treatment is carried out under the supervision of the Department of Public Works."

Elizabethtown, Ky.—"The City Council voted to finance this program from water revenue because it was considered a definite benefit and improvement of the water supply to the city."

Danvers-Middletown, Mass. — "The town manager of this community and his advisors felt that this was a logical water department activity."

Westerville, Ohio—"That fluoridation is an additive treatment of water, generally comparable to chlorination, softening and taste control."

In reference to the cost of fluoridation, Antigo, Wis., states "the cost of this program runs less than five cents

per person per year," while Fort Atkinson, Wis., reports "a cost of approximately 16½ cents per capita per annum." This was the range of fluoridation costs as reported by the 98 communities.

In reply to question 6 of the questionnaire: "In fluoridating your communal water supply was this principle submitted to a public referendum or was the decision of dental, medical, and public health officials accepted as such?"—Of the reporting 98 communities, 96 achieved fluoridation by community action following the recommendation of medical, dental, and public health authorities and approval and appropriate action by the city administration. In two cases the subject of fluoridation was submitted to public referendum, i.e., Eagle River and Edgar, Wis. Both reported an overwhelming majority in favor of it. (Since this survey was undertaken, two large cities submitted fluoridation to a referendum: San Francisco, Calif., where it was approved and Seattle, Wash., where it was defeated.)

For the 96 communities which achieved fluoridation through community organization, the reporting official from Danvers-Middletown, Mass., summed their thinking rather aptly: "The matter received considerable publicity and the judgment of the informed officials was accepted by the public."

In reply to question 7 of the questionnaire: "What complaints if any have been received following fluoridation?"—Seventy-eight reported "none," or such remarks as:

Grand Rapids, Mich.—"We have never had any complaints following fluoridation. Our experience to date has all been favorable."

Louisville, Ky.—"None, very successful to date. Enthusiasm for fluoridation is now greater than ever before."

The remaining 20 communities cited isolated complaints that were purely imaginative since in almost every instance these complaints were registered prior to the actual date of fluoridation; e.g.:

Mount Dora, Fla.—"Only one complaint against the taste since system was installed. Due to a premature announcement, several of the people thought fluoridation was being accomplished one month before it was actually put in the water. During this month three complaints were registered: (a) taste too strong; (b) killed my goldfish; (c) canaries quit singing."

Westerville, Ohio—"None directly. Many elderly people were originally under the misapprehension that fluorides cause bone brittleness. These people were advised to seek the advice of their physicians and their doubt was soon dispelled."

It is interesting to note from this survey that not only have fluorides been added to fluoride-free waters but to fluoride-deficient waters also, i.e., waters containing some but not the optimum level of fluorides, e.g.:

Saginaw, Mich.—"Our water supply contains a natural fluoride content of 0.1 ppm; 0.9 ppm is added to make 1.0 ppm.

Antigo, Wis.—"Natural fluoride content of water is 0.25 ppm. We add 0.95 ppm to make a residual of 1.2 ppm."

Graham, Tex.—"We have approximately 0.4 ppm in our water before treatment and add 0.7 ppm which gives us a 1.1 ppm in the finished water."

Finally, at the bottom of the questionnaire space was left for "remarks"; the following pertinent ones were made by the reporting officials:

Tuscaloosa, Ala.—(Fluoridation began in June, 1951)—"A complete dental examination of all school children of communities served by our water system—between the lowest age group through age 13—was made and findings recorded. After five years a similar age group will be studied."

Lewiston, Idaho—(Fluoridation began June, 1947)—"There has been a marked reduction in the caries rate."

Elizabethtown, Ky.—(Fluoridation began in June, 1951)—"There are no changes in the taste, color or chemical reaction of the water. We feel that this addition will definitely benefit the community over a period of time."

Ludington, Mich.—(Fluoridation began in

January, 1949)—"Had very good reports from (water) plant operators."

Perhaps the remarks of the reporting official from Madison, Wis., leaves nothing more to be said:

Madison, Wis.—(Fluoridation began in June, 1948)—"Any city with a fluoride deficient water supply that does not buy this bargain just doesn't know a good thing when they see it."

The questionnaires for this survey were forwarded in every instance to the "Health Officer" of the community in which fluoridation had been undertaken, whether it was known or not that a health officer, as such, existed. Of the 98 replies, the reporting officials, whose signatures were affixed to the questionnaire, fell into the following categories of positions in order of largest number reporting:

Superintendent of Water Works	32
City or County Health Officer	30
Public Health Engineer, or Water Works Engineer	13
City Manager or Mayor	9
Dental Health Officer	5
Water Works Personnel (chemical)	4
Bureau of Sanitary Engineering (state)	3
Health Administrator	2

From this listing it is evident that a variety of types of personnel were involved in the preparation of the answers to these questionnaires and from the material presented herein it is evident that the reporting is of one mind, i.e., fluoridation is feasible, has tremendous public support, is inexpensive, and within the optimum limits is safe and beneficial. Fluoridation may be spoken of in the light of Victor Hugo's remark: "Nothing in this world is so powerful as an idea whose hour has come."

SUMMARY

1. The need for new dental decay preventive technics has long been sought, and the fluoridation of communal water supplies solves part of this problem.

2. A survey was undertaken of all communities fluoridating their communal water supply as of October 15, 1951.

3. The 98 communities reporting fall into the following population categories:

22 less than 5,000 population
22 between 5,000 and 10,000 population
35 between 10,000 and 50,000
12 between 50,000 and 100,000
7 over 100,000

4. Fifty-four per cent of those reporting are using sodium fluoride. Forty-three per cent of those reporting are using sodium silico fluoride. Three per cent of those reporting are using hydrofluosilic acid or hydrofluoric acid.

5. None reported difficulty in obtaining their chemicals.

6. Fluoride dosage of water varied from 0.5 ppm for the summer months in the southern states to 1.4 ppm for the winter months in the northern states, dependent on water consumption, which in turn is dependent upon mean minimum and mean maximum temperatures.

7. Ninety per cent of reporting cities report fluoridation financed from water revenue. The remaining 10 per cent report fluoridation financed from general funds (6 per cent) and health department and other funds (4 per cent).

8. Ninety-eight per cent of all reporting communities had fluoridation brought about through action by dental, medical, and public health groups as well as an informed public.

In only 2 per cent of the cases was fluoridation submitted for public referendum.

9. With reference to complaints received concerning fluoridation, 80 per cent reported no complaints at all. The remaining 20 per cent reported isolated complaints, but these were purely imaginative since in almost every instance the complaint was registered between the date of the announcement of fluori-

dation and the actual date of inception of the fluoridation program.

10. Fluoridation is feasible, has tremendous public support, is inexpensive, and within optimum limits it is safe and beneficial.

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The Journal 25 Years Ago

The Presidential address of Charles V. Chapin, M.D., at the 56th Annual Meeting of the Association in Cincinnati in 1927 entitled "Science and Health" was a scholarly summary of the point that had been reached and the men, both known and unknown, who had pioneered in the solution of various problems. His paragraphs on Bad Air follow:

From the time of Hipprocrates, people have feared bad air. As late as 1908, I said, with truth, we did not know what made bad air bad, or, indeed, whether bad air really is bad. A multitude of studies have since proved, as has been so well set forth by the Commission on Ventilation, headed by my immediate predecessor in this chair, that bad air is bad, not because of the poisons it contains, but because it is too hot or too cold, too damp or too dry, or has too little or too much motion. No wonder that brilliant success did not crown our earlier efforts at ventilation, but that vast sums were wasted to no purpose.

The belief in the evil nature of sewer air has been referred to. Because the plumbing was found to be defective in a house where typhoid fever occurred, it was assumed that sewer air did it. Few dared question the theory. Finally Winslow showed that one may breathe the air from a soil-pipe all day without danger of contracting typhoid fever.

The whole address is worthy of today's rereading and his last paragraph remains permanently relevant:

We have received a great heritage of knowledge from those who have gone before, both from the masters and from those who have been called the "hod carriers of science." Most of us must perforce belong to the latter class, but let us carry our hod well and try to place at least one stone on the ever growing edifice of science.

How National Sanitation Foundation Standards Are Developed

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THE need has long been recognized for agreement as to the minimum basic requirements in the construction of equipment used in the broad field of sanitation in order to promote public health and cleanliness. This has been particularly acute in food service equipment of all types because of the rapid growth of the food industry and the ever-increasing use of mechanical equipment. Such agreement is necessary first within the family of public health officials and then between those officials and industry, including manufacturers as well as purchasers and users.

By joint effort the National Sanitation Foundation and committees representing other national organizations, including the American Public Health Association, the Public Health Service, the International Association of Milk and Food Sanitarians, the National Association of Sanitarians, the Conference of State Sanitary Engineers, and the Conference of Municipal Public Health Engineers, have developed what is believed to be a practical method for standardizing requirements for equipment as well as for testing and approving equipment which meets such standards. Work was started in the field of food service equipment, and a description of the procedure involved should be of general interest as it sets the pattern for future standards. The first tangible result is the newly published *National Sanitation Foundation Standard for Soda Fountain and Luncheonette Equipment.*

What shall we consider to be the minimum requirements in the construction of food service equipment necessary to protect the public health and make it easy to maintain reasonable cleanliness?

The question has never been easy to answer. Some states and cities have assigned technical personnel to research and testing. Others, lacking in resources, have relied upon the individual judgment of health officials. Many state and local officials have sought specific help from the PHS, an organization which, alone, is not in a position to provide all of the information desired. Since most decisions as to what is acceptable in equipment have been based upon opinion or at best upon general criteria without the benefit of adequate research or standards, it is not surprising that sanitation of equipment has become a controversial issue.

Industries manufacturing equipment have found it almost impossible to market a single product throughout the country. They have been constantly besieged with complaints, calling for adjustments and changes. The food service industry as the user has been forced to discard equipment not meeting local standards, resulting in economic loss and inefficiency.

These conditions have become intolerable, both to health officials and to the industries concerned. The consuming public has paid and continues to pay for inefficiency in terms of higher cost of food, inefficient service, and extravagant use of health personnel resulting in less public health protection.

In the recognition and solution of similar problems in the milk industry, the International Association of Milk and Food Sanitarians, the manufacturers of dairy equipment, and the PHS pioneered in establishing the 3-A Sanitary Standards. This undertaking was begun in 1933 and has accomplished many worth-while objectives. It was natural that the IAMFS Committee on Food Sanitation should take the initiative by suggesting the formation of a joint committee, in collaboration with the NSF, for the purpose of establishing food sanitation standards.

In June of 1948 about 400 leaders in the field of health and industry met in Ann Arbor to consider mutual food sanitation problems at the First National Sanitation Clinic. Outstanding among the recommendations was that pointing to the need for a National Sanitation Foundation Testing Laboratory with a reputation for unimpeachable integrity. In accepting the challenge to establish such a laboratory, it was necessary that the Foundation actively support the development of standards as the basis for the testing and approval of equipment.

JOINT COMMITTEE ON FOOD EQUIPMENT STANDARDS ESTABLISHED

At the invitation of the Foundation, representatives from six national professional sanitation organizations met in Ann Arbor in June, 1949, and approved the idea of a Joint Committee on Food Equipment Standards.

Following agreement on the principles of organization, an interim committee developed procedures which have been approved by the Joint Committee and the Council of Public Health Consultants of the Foundation. These procedures recognize that nationally accepted sanitation standards for food equipment are essential and that representatives of industry and public health sanitation should work together toward their achievement.

Some of the more important provisions of the Joint Committee procedures are:

I. Membership of the committee shall consist of:

1. A representative of the Public Health Service.

2. The chairman or a member of the appropriate committee of each of the following organizations:

International Association of Milk and Food Sanitarians
National Association of Sanitarians
Engineering Section, American Public Health Association
Conference of State Sanitary Engineers
Conference of Municipal Public Health Engineers

3. A secretary appointed by the National Sanitation Foundation.

4. A public health sanitation delegate at large who is a member of the Council of Consultants of the National Sanitation Foundation.

5. Delegates of such additional national organizations as may be recommended by the committee and approved by the Council of Public Health Consultants of the National Sanitation Foundation.

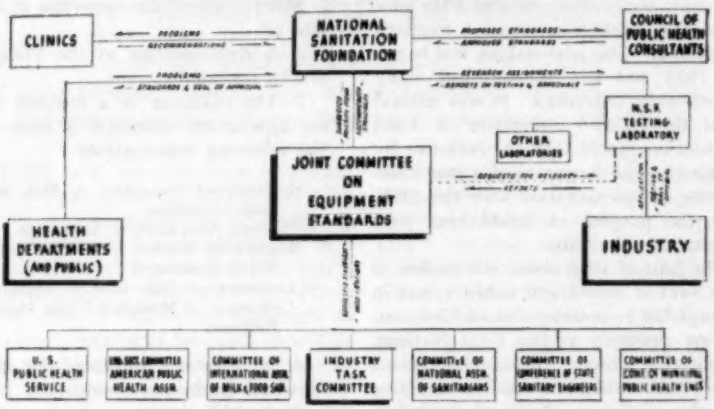
II. Officers consist of a chairman elected by members of the committee and a secretary appointed and employed by the NSF.

III. The NSF, with the advice of its Industrial Advisory Board, encourages that branch of industry or business most directly concerned with any particular standard that is to be developed to appoint or form a "task committee" to draft such a standard. This committee or its representative or representatives is then invited to participate in the committee sessions at which the standard affecting their interests is considered.

IV. Projects for preparing standards may be recommended by industry, committee members, members of the Council

CHART I.

ORGANIZATION CHART
NATIONAL SANITATION FOUNDATION PROGRAM
FOR STANDARDIZING, TESTING AND APPROVING EQUIPMENT



of Consultants, or others, but must be approved by the Foundation in accordance with its policy of assigning priorities before action is taken.

V. The committee secretary encourages industry task committees to prepare preliminary standards for submission in writing to committee members in advance of committee meetings. Revised drafts are prepared as necessary until all groups are in agreement, arrived at in meetings or by mail.

VI. It is assumed that by their appointment each committee member is authorized to perform all of the functions outlined in the by-laws. While it is generally not possible for him to seek approval of the full executive committee of his organization before standards are approved, it is recognized that he will consult with his committee or key members of his organization. Results are reported to the membership, usually at annual meetings, and action taken to accept the committee reports.

VII. Following approval of standards by the Joint Committee the final draft is submitted to the Council of Consultants of the Foundation for approval, publication and use by industry and control officials, and in awarding the National Sanitation Foundation seal of approval.

VIII. Coöperation of users of equipment in this program is invited when such users are organized and interested.

Chart I shows the organization of the program.

JOINT COMMITTEE OPERATION

In the fall of 1950 the Joint Committee on Food Equipment Standards first met at the Foundation headquarters in Ann Arbor, Mich. Committee representatives and their affiliations were as follows:

C. W. Clark, National Association of Sanitarians
A. H. Fletcher, Conference of State Sanitary Engineers
A. W. Fuchs, Public Health Service
M. A. Hilbert, Conference of Municipal Public Health Engineers
W. D. Tiedeman, Engineering Section, American Public Health Association
C. W. Weber, International Association of Milk and Food Sanitarians

Task Committee representatives were:

G. S. Blakeslee, Dishwasher Machine Manufacturers
A. W. Forbriger, Food Service Equipment Industry, Inc.
C. J. Palmer, Soda Fountain Manufacturers Association
Stanley Knight, Soda Fountain Manufacturers Association

Dr. W. L. Mallmann acted as a consultant on formulation of dishwashing machine standards; C. L. Senn as a consultant on soda fountains, and Walter F. Snyder as representative of the National Sanitation Foundation.

Mr. Senn was elected chairman of the Joint Committee on Food Equipment Standards and Walter D. Tiedeman was appointed secretary.

As indicated by the industries represented at the initial meeting, the first standards to be considered were those on dishwashing machines, food service equipment, and soda fountains.

These industries had long shown an interest in standards and had previously completed several necessary preliminary steps in standards development.[1-4]

In the course of developing each set of standards, at least two meetings are held between the Joint Committee and the Industry Task Committee; four to five drafts of each proposed set of standards are circulated and studied, and the secretary averages from three to four meetings with industry task committees.

The first standard published is that for *Soda Fountain and Luncheonette Equipment*. Closely following will be the *Standard for Food Service Equipment* and the *Standard for Spray Type Dishwashing Machines*. The dishwashing machine standard, based largely on research conducted since 1944, has been delayed pending further study sponsored by the Foundation, which is conducted by Dr. W. L. Mallmann at Michigan State College.

In recognition of the next step beyond standards development, the Foundation executive committees of the Council of Public Health Consultants and Industrial Advisory Board met in June, 1952, to complete plans for a testing laboratory and a seal of approval.*

WHO BENEFITS AND WHY?

Business, industry, health officials, and the general public will share in the benefits of reasonable food equipment standards which are properly administered and are subject to revision with time so as not to stand in the way of progress.

In 1950 the Association of State and Territorial Health Officers recognized in a resolution the "ever-increasing complexities of problems of the environment" and that "states are obviously unable to engage in extensive research in these matters" and recommended expanded research by the Public Health Service and establishment of a sanitation testing laboratory by the National Sanitation Foundation.

In 1951 the American Public Health Association, through its Governing Council, adopted a resolution pointing to the need for standards in certain phases of sanitation programs as a means of measuring public health accomplishment and "Resolved that the U. S. Public Health Service and the National Sanitation Foundation be requested to expand their programs toward developing standards for the various phases of sanitation."

In answer to the objectives and needs of industries and professional health organizations, the Foundation has provided facilities for coöperative effort and methods for arriving at acceptable sanitation standards for the food service in-

* Plans for this activity had long been in the planning stage by a committee of the Council of Public Health Consultants under the chairmanship of L. J. Peterson, administrative director of the Idaho Department of Public Health. Procedures established for the organization and operation of the testing laboratory are available upon request to the NSF.

dustry. Ultimate benefits of the undertaking will require continued individual and group coöperation on the part of all participants.

For example: The development of the system of standards, testing, and seal of approval for a given industry requires a sound understanding by individual industries and sanitarians of the methods by which such standards are developed.

Participating industries and health officials themselves will be the monitors which protect the integrity of the seal of approval and at the same time give it the respect and prestige through which maximum benefits will result. A contractual agreement between the Foundation and a manufacturer seeking approval offers a legal basis for enforcing compliance with standards where necessary.

Success of the system of sanitation standards and seal of approval will depend upon the willingness of additional industries supplying food equipment to proceed with the method which has been made available for the development of standards.

Industries interested in developing sanitation standards for their products should be advised of the following procedure:

1. Representatives of the industry or association of industries should contact the Foundation's Executive Director, Walter F. Snyder, in Ann Arbor, Michigan, giving details of the product on which officials may base an estimate of the cost involved and establish a priority.

2. An industry task committee must be formed composed of members thoroughly familiar with every aspect of the particular product involved.

3. Working with the secretary of the Joint Committee on Food Equipment Standards, the Industry Task Committee should prepare tentative standards which will be mailed to members of the Joint Committee.

4. Joint Committee members will meet with the Industry Task Committee and consider the standards.

5. Any research required to supply additional information on which to base satisfactory standards will be arranged by the Joint Committee secretary and must be financed by the industries involved.

6. Drafts of the proposed standards will be revised and resubmitted to the Joint Committee and Task Committee until agreement is reached. An additional meeting or meetings may be necessary.

7. Following final approval by the Joint Committee, standards will be submitted to the Foundation's Council of Public Health Consultants and, if approved, will be printed as National Sanitation Foundation standards and used as a basis for awarding the NSF seal of approval.

Progress in establishing this program has been necessarily slow. While considerable acceleration is to be expected, further standardization will not be rapid enough to suit everyone. With the wise application of priorities, the more essential items may be standardized first. As the work progresses equipment affecting health or sanitation other than food service equipment may be included.

It is believed that this program, wisely applied and directed, is a practical answer to the long-felt need for uniform public health and sanitation requirements relating to equipment used in food service or other fields affecting health or sanitation. Mutual benefits should be realized by the general public, manufacturers, users, and public health officials. Gradually orderliness, uniformity, and mutual confidence should replace the present chaotic condition in respect to the public health approval of equipment used in the environmental health field, especially food service equipment.

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Promoting Mental Hygiene Through the County Public Health Department

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IN 1950 the director * of the Mental Hygiene Division of the Oklahoma State Department of Health † initiated a plan to promote mental hygiene through the county health departments. The project was developed because of the shortage of professionally trained, experienced psychiatric personnel available to assist in a state-wide mental hygiene program. The major concentration of psychiatrists, psychiatric social workers, clinical psychologists, and psychiatric nurses was limited to several areas of the state such as Oklahoma City, Norman, Tulsa, and Muskogee.‡ The purpose of the plan was to promote mental hygiene concepts, to create an awareness of abnormal behavior, to refer cases early for psychiatric consultation and treatment, and to promote good health in the community by coördinating the services of the various agencies through an educational group work approach.

The project envisioned by the director of the Mental Hygiene Division was started in Shawnee, Okla., in coöperation with the county public health officer.** Shawnee is a community of about 22,900 persons and is the county seat of Pottawatomie County with a population of 43,000. A meeting was scheduled for the fourth Tuesday of each month to be held at the county health department. Representatives invited to participate included persons from the Department of Public Welfare, the Child Welfare Division, the county court, the sheriff's office, city and county schools, and Oklahoma Baptist University. In addition to the medical director and the public health nursing consultant, the entire staff of county public health nurses was present.

Referrals of problem cases known to schools, courts, or welfare agencies were submitted to the medical director of the county health department who screened out and selected a case for presentation at each meeting. A case summary was prepared by the referring agency and collateral data was obtained from other community sources. The director of mental hygiene acted as moderator. Following the diagnostic evaluation there was informal participation in discussion by the group regarding the social, medical, or psychiatric recommendations made. It is significant that once the project got under way the group has continued to meet regularly once each month. The original nucleus of the group has remained the same but has been augmented from time to time by other interested persons in the community such as the American Red Cross or a pastor of a local church. These were the people in the community who had worked directly with the child or

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† G. F. Mathews, M.D., commissioner of health and state mental health authority.

‡ There were three mental hygiene clinics in Oklahoma City; an all-purpose mental hygiene clinic at the University Hospital, the Community Mental Hygiene Clinic, and the Veterans Mental Hygiene Clinic.

Tulsa organized a child guidance clinic in 1949.

The state had six institutions; four for mentally ill, one for epileptics, and one for the mentally retarded.

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the parents in the schools, homes, or agency settings.

From the presentation of cases the group became increasingly aware of the multiplicity of causes that contribute to personality maladjustments in children. As basic mental hygiene principles became integrated, the members developed an awareness of the resources available or lacking in the community. Typical of the cases presented were the following:

1. A 10-year-old girl had been placed in a foster home following the divorce of her parents. Three siblings, 1 older and 2 younger, were placed in a children's home. The mother had remarried twice since her divorce. The child, who had been described as her father's favorite, displayed no interest or affection for her mother. She came to the attention of the school personnel because of her boasts of precocious sexual play with older boys in the school and older men in the community. The foster mother felt she could not cope with the girl's preoccupation with sex and feared that the child would become delinquent.

2. A 9-year-old boy was referred by the court regarding placement because his mother was being committed to a state mental hospital. Both parents had had multiple marriages; the father had made no effort to support the 6 children by his 3 previous marriages and appeared to be an inadequate person to care for this child at this time. The boy was well known to the school authorities as a problem child because of his aggressive behavior toward other children and his proclivity toward lying. While detained in a children's home temporarily he had started fires.

3. A 14-year-old girl had been referred regarding placement. She had been living with her 74-year-old paternal grandmother who was ill and unable to continue care and supervision. Her father had died in a veterans' hospital at 35 years of age. The mother had been arrested numerous times for drug addiction, alcoholism, and sexual promiscuity. The relatives were unstable; none had contributed to the girl's support. As a ward of the court until she was 16 years of age, the girl could be placed in a foster home or be sent to a girl's school.

4. An 8-year-old girl was referred by the school because she was restless, uncoöperative, created scenes to attract attention, and picked on smaller children. She had no friends among her own age group. On several occasions she urinated on herself while in the classroom. Family history revealed that the parents had separated in California and the mother had returned to Oklahoma as the father, an alcoholic and a gambler, failed to support his family. The couple was subsequently divorced. The mother was oversolicitous of the child and tried to make up for the loss of attention of the father. The child was a bed-wetter and made great demands on her mother who was overpossessive and yielding to the child.

As the group shared its knowledge and desire for further information, their interest shifted from the specific case to the wider aspects of community health and the over-all health and welfare resources on a state level which may be illustrated by the following cases:

A. A 15-year-old single girl, high school graduate, had polio 2 years ago with mild residuals of paralysis in her left leg. She was being cared for in her nome by an overprotective and oversolicitous mother who waited on her "hand and foot." In spite of medical reassurance that she was able to walk, this patient had no motivation to walk. She was corresponding with her fiance, a soldier in Korea, and gradually withdrew to a life of fantasy plus maximum attention-getting utilization of her

symptoms because of her mother and her immediate environment.

It was evident that the home environment was not good because too many things were being done for the patient, and it was recommended that she be placed in a vocational rehabilitation school so that she would be motivated through the example of other disabled patients to do more for herself on her own initiative. The patient began to improve after 3 weeks in the rehabilitation center and is now learning to walk as well as learning to participate in occupational therapy. It is rumored that she is planning to be married as soon as her fiance returns from Korea.

In this case, the simple recommendation that the patient be removed from the overprotective home environment to the more stimulating atmosphere of the rehabilitation center was sufficient to start the patient on the road to a better adjustment.

B. Another case is that of a 16-year-old junior high school boy who, together with a companion of the same age, was charged in the juvenile court with vagrancy. The boy had an unfortunate background in that his mother had died at the time of his birth and he was reared by his grandparents. Since he was the only child in the home, he had very few playmates of his own age. The boy was fond of music and had not associated with children his own age, preferring the company of older people or to be alone listening to his musical records. The only reason he could give for stealing was that "it was just something interesting to do."

The patient had lost interest in school and was frequently truant and had been seen on several occasions by the guidance teacher. He was referred to a private psychiatrist for psychotherapeutic interviews with the result that he became more interested in his schoolwork.

The grandmother was also interviewed. She demonstrated intelligent insight into the situation and a willingness to change some of her "smothering" attitudes toward the boy which were based on her own individual needs since the mother of the patient had been her only child.

It was recommended to the county judge in this case, since the boy was acting out certain emotional feelings which were better understood through psychotherapy, that he be treated leniently, with consideration, and minimum punishment. This was accomplished for the patient and his subsequent adjustment has proved the value of this therapeutic approach.

Another technic used to promote interest in mental health was the showing of selected films. The emotional problems of everyday life were illustrated by such films as *Fears of Children*, *Farewell to Childhood*, *Life with Grandpa*, *Steps of Age*, and *Retire to Life*. Other visual aids in stimulating and promoting group discussion and understanding were the films, *Feeling of Rejection*, *Palmour Street*, and *Individual Differences*. The State Department of Health has a film library of some 600 films on various subjects related to health with about 85 on mental hygiene subjects.

A detailed presentation of a recent case is given to illustrate the professional growth of the group; this case summary presented by the public health nurse was based on the material obtained from the court and school teachers:

The parents of a 10-year-old Negro boy had requested consultation and advice because of his petty stealing and "irresponsible" behavior. The parents wished to prevent any possible delinquency which might cause the boy to be sent away from home to the state training school.

The family consisted of the parents, an older boy of 12 years, and a young child, a girl of 2 years. The family lived

in a comfortable home and their income was better than average due to the fact that the father, who was regularly employed, also worked on a part-time basis in the evenings. The mother had been employed part-time until several months earlier. At that time the boy had stolen several articles, such as toys, from the store where his mother was working. She made the boy return the stolen articles to the store manager who dismissed the incident. The parents were worried, however, and the mother gave up her job when advised that she was needed at home to supervise the children. The mother felt incapable of supervising the boy whom she compared unfavorably with his 12-year-old brother. The father was described as a stable, responsible member of the community; he was also a deacon in the church.

The entire family appeared promptly at the County Public Health Office by appointment. The 10-year-old boy was interviewed privately by the psychiatrist, while the parents were interviewed by the psychiatric social worker. The older boy entertained his little sister in the playroom during this period. The rest of the group saw a new mental health film, *Retire to Life* * which augmented the previous month's general discussion about geriatrics.

The psychiatrist's report indicated there were no abnormal findings. The boy appeared average for his age, evidenced normal interests, and had been quite friendly in the interview situation. The boy had volunteered the information that he had no place to play and that there were no facilities for swimming or recreation. His only playmate was a cousin of his own age. The attitude of the parents was described by the social worker. They were coöperative and eager to receive any suggestions or advice. The father believed that the boy was going through a normal period of development and had now learned a lesson. The father said he would cooperate fully in any plan to keep his son at home. The mother felt the boy was "irresponsible" and gave as examples the facts that he was careless in the care of his bicycle which he shared with his brother and because he left home without telling her where he was going or when he would return. She had given up her job to be with the children but was concerned with the boy's disobedience. She pointed out the differences between the two boys saying they had few interests in common and that the older boy was quiet and obedient. She admitted that both boys helped with the dishes, did small tasks about the house, and that they were both devoted to their little sister. At the conclusion of the interview, the father stated he would be glad to see the social worker, nurse, or medical director for further conferences, if advised.

Following this report to the group, informal discussion revolved around such related topics as the home and its environmental influences, the need for supplying emotional as well as economic security in the home, the question of sibling rivalry and of individual differerences, and the relative strengths of each parent in this case. While the group as a whole was not prepared to accept the possible rejection of the boy by his mother, it was felt that the mother was less understanding than the father and that it was the father with whom further planning should be done. He should be encouraged to spend more time with his family and growing sons and should accept his role as the kindly, authoritative figure. Because of the lack of recreational facilities for the Negro group in the community, the parents should be encouraged to make their home a meeting place for the two boys and their friends. The son appeared to lack emotional security and needed to

* Produced by the Oklahoma State Department of Health.

have his feelings of being wanted and loved demonstrated within his family group. This would prevent antisocial or predelinquent behavior.

Monthly mental health consultation clinics over a two-year period have been held in a local county health department.

ACCOMPLISHMENTS

1. There has been a free exchange of ideas among participants. The psychiatric consultant has been able to make interpretations of certain mental health principles both of the dynamics and the technics for handling interpersonal relations.

2. All of the participants have been persons working with individuals who are experiencing normal situational stresses. In their contacts with these individuals they have been able to help them with their problems of emotional adjustment, and by learning in some detail the psychodynamic principles of a single case they are more confident in their dealings with other cases of a similar nature.

3. As a result of the discussion of a case, the plan of action for disposition was clarified and the responsible person or agency was encouraged to proceed. This avoided duplication and the confusion of two or three different agencies trying to solve the same case problems.

4. The participants commented that their work assumed new meaning when they "learned a little about human behavior," particularly the psychodynamic orientation, "why people act the way they do."

5. The county health officer was able to maintain contact with important people and agencies in the community and to follow up the sanitary and immunization procedures where the need was revealed.

6. An interested group of people was introduced to the mental health film library, and then films were recommended to club groups, parent-teacher groups, etc., thus furthering the general mental health education program.

7. Community resources, both in personnel and facilities, were recognized and utilized.

8. A practical technic for the utilization of scarce psychiatric personnel has been demonstrated and proved of value.

9. The county health unit with its staff, including a medical officer, nurses, and sanitarians, provides an ideal setting for the location of a part-time mental hygiene clinic.

NOTE: As of September, 1952, clinics were being held in Shawnee, Muskogee, Wewoka, and Ponca City.

Recall of Women Medical Reserves

Because volunteers among qualified nurses and women medical specialists have been inadequate to meet requirements, the first involuntary recall of women reservists in the medical branches of the Army since early in the Korean campaign has been approved by Assistant Secretary of Defense for Manpower Anna M. Rosenberg. Included in the recall of reservists are 500 Army nurses and 125 from the Women's Medical Specialist Corps—70 dietitians, 31 physical therapists, and 24 occupational therapists. Fifty per cent of those to be ordered to active duty are scheduled for recall in February, 1953, with 25 per cent in each to be called in March and April.

Study of Procedures Used for Screening Elementary School Children for Visual Defects*

Referrals by Screening Procedures Versus Ophthalmological Findings

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THE primary purpose of this study was to determine the relative efficiency of certain procedures used in screening elementary school-age children for visual defects, as measured by the success of the procedures in identifying those students whom ophthalmological examination showed to be in need of eye care.

METHODS

The general plan and methods of the study have been presented in earlier publications [1, 2] and will be fully described in a later report. They will be reviewed here only briefly.

The study was conducted in the public elementary schools of St. Louis between February, 1948, and May, 1949. Subjects of the study were 609 sixth-grade students and 606 first-grade students from 14 elementary schools.

Each student was given a complete ophthalmological examination. The ophthalmologist's clinical judgment as to whether or not the student needed to be referred for eye care is the criterion against which the results of the screening procedures are evaluated.

The screening procedures selected for study were administered to the students by three different testers: a technician who tested all of the students included in the study; the nurse serving the school attended by the student being tested; and the student's classroom teacher. As used in reporting the results of the testing, the term "nurse" represents a composite of the findings of 12 different nurse-testers, and "teacher" represents the findings of 58 different classroom teachers.

Every sixth-grade student was tested with the following procedures by each of the testers listed for that procedure:

Judgment—teacher
Snellen Test—teacher, nurse, technician
Massachusetts Vision Test—nurse, technician
Keystone View Company Telebinocular Test—nurse, technician
Bausch and Lomb Ortho-Rater Test—nurse, technician
American Optical Company Sight-Screener Test—nurse, technician
Near Vision Test—nurse, technician

* This study was carried out with the joint support of the National Society for the Prevention of Blindness, the Children's Bureau, Federal Security Agency, the Division of Health of the State of Missouri, the St. Louis Board of Education, the Department of Ophthalmology of Washington University School of Medicine, and the Office of Naval Research.

† Deceased.

The procedures and testers for first-grade students were the same as for sixth-grade students, except that first-grade students did not receive the Ortho-Rater and Sight-Screener Tests. Some of the test charts used in these two procedures are designed for subjects who have more ability to read than is to be expected in the first grade.

On the basis of his performance on a given test, each student was classed as either a referral or nonreferral by that test.

It is important to note that there are at least three factors that might affect the relative efficiency of the different testers: (1) professional background, (2) training and experience in the testing procedures, and (3) previous acquaintance with the students tested. The technician was given more preliminary training in administering the tests than the nurses, and the teachers had the least training. This was planned, intentionally, to simulate the amounts of training which, in a school vision testing program, it would probably be practicable to provide for (a) one tester for many schools, (b) one tester for each school, or (c) each classroom teacher. The individual who tests many students naturally acquires more experience in the course of the program than the one who tests a smaller number and the same was true in this study.

Clinical examinations and screening tests were administered as follows:

Ophthalmological Examination—Three ophthalmologists working as a team gave each student a complete eye examination, including refraction under cycloplegia. One of the ophthalmologists evaluated all of the findings and recorded a clinical judgment for each student: "refer" if there was need for eye care, "nonrefer"* if special eye care was not needed.

Students referred by a screening procedure who are also referred by the ophthalmologist are considered "correct referrals." Those referred by the screening procedure but not by the opthalmologist are considered "incorrect referrals" or "overreferrals." Those referred by the ophthalmologist but not by the screening procedure are considered "underreferrals"—students who should be referred but who were "missed" by the screening test.

Teacher Judgment—Before she administered the Snellen Tests the classroom teacher recorded for each of her students whether or not she thought he needed an eye examination. These judgments were based on general observation, but in each school, before the judgments were recorded, the teachers met with a physician or nurse on the study staff for a discussion of the common signs and symptoms of eye trouble. A teacher recorded judgments on all the students in her class within a period of a few days, usually on a single day.

There are other ways of obtaining and using the teacher's judgment in a screening program. The data obtained on the accuracy of Teacher Judgment in this study are not necessarily applicable to the judgments obtained from teachers in other ways or under other conditions.

Snellen Test—The E symbols on the Massachuetts Vision Test Chart were used for tests of visual acuity at a distance of 20 feet. Since these symbols are constructed according to the principles of the Snellen Chart, it was assumed that the test would be the same as a test with a correctly placed and properly lighted E-symbol Snellen Chart.

Massachusetts Vision Test—The procedure followed in administering the Massachusetts Vision Test was that recommended by the Massachusetts State Department of Public Health except that, instead of discontinuing the test when a student failed one part of it,

* In an earlier report[9] a third group is described as "theoretical referrals." These are included here in the "nonrefer" group.

the complete test was given to every student.

Near Vision Test—A test of visual acuity at the reading distance was made by asking the student to read 3 test lines from a chart placed at a distance of 14 inches from the eyes. For sixth-grade students the test lines consisted of 6 letters each from the 14/14, 14/17, and 14/23 lines of the Lebensohn Chart. First-grade students were asked to indicate the position—right, left, up or down—of 4 symbols each in the 14/14, 14/17, and 14/21 lines of the Guibor Chart.

Ortho-Rater, Sight-Screener, and Telebinocular Tests—The manufacturer's instructions were followed in the Ortho-Rater, Sight-Screener, and Telebinocular testing procedures. The tests of color vision which these procedures include were omitted since color blindness is not a cause for referral for eye care.

Combination of Procedures—The effect of combining certain of the screening procedures was examined. The combinations studied were: Teacher Judgment and the Snellen Test; Teacher Judgment, Snellen Test, and Near Vision Test; Snellen Test and Near Vision Test.

STANDARDS FOR REFERRAL

Some of the standards used in this study for interpretation of measurements obtained on the tests in terms of referral or nonreferral have been developed on the basis of data made available for the first time in the study. No standards for referral had been established previously for certain of the procedures. Where standards already existed, these have been applied in interpretation of the study data. If evidence indicated that a standard based on the new data available from the study would give a higher degree of correspondence between the screening test and the ophthalmologist's referrals than was obtained with the preëxisting standard, the results of using both the old and the new standards are presented.

For the Snellen Test two frequently employed standards, or "cut-off" scores for referral, have been used. These are designated as the "high" standard and the "low" standard. A "high" and a "low" standard were used for the Near Vision Test also.

For the Massachusetts Vision Test the standard for referral used is that recommended by the Massachusetts State Department of Public Health.

The manufacturers of the Ortho-Rater and the Sight-Screener have made no recommendations as to how the measurements obtained on these tests should be interpreted. Standards for referral have therefore been developed on the basis of the distributions of test measurements obtained in this study. A later report of the study will give further details as to how these standards were established.

For the Telebinocular Test the standard for referral recommended by the manufacturer is used. A student is referred if he has any measurement outside of the range shown as "expected" or "doubtful" on the record forms supplied with the instrument. A second interpretation of Telebinocular measurements was based on a standard developed in the same way as the standards for the Ortho-Rater and Sight-Screener. This has been designated as the "Study" standard.

With the combinations of screening procedures, a student is classed as a referral if he is referred by any of the tests included in the combination.

The standards for referral can best be shown in terms of the measurements or scores that are accepted as evidence of satisfactory performance. Any score outside of this range is considered unsatisfactory and an indication for referral. If a student obtains an unsatisfactory score on any part of a procedure, he is classed as a referral by that procedure.

Screening Procedure	Measurements Acceptable for Nonreferral	
Snellen Test	High Standard	Low Standard
Right eye	20/20	20/30 or better
Left eye	20/20	20/30 or better
Near Vision Test	High Standard	Low Standard
Right eye	14/14	14/17 or better
Left eye	14/14	14/17 or better
Both eyes	14/14	14/17 or better

Massachusetts Vision Test		
E symbols		
Right eye		20/20
Left eye		20/20
Plus sphere		Unable to read 20/30 line with either eye; or, unable to read 20/30 line with one eye, read 20/30 line but unable to read 20/20 line with other eye.
Muscle balance		
Far vertical		Through window
Far lateral		Through house
Near lateral		Through panel
Ortho-Rater		
Far Point	*Measurement*	*True Value*
1 Phoria, vertical	3– 8	1.0 left hyperphoria—1.0 right hyperphoria *
2 Phoria, lateral	2–13	6.66 esophoria—4.33 exophoria *
3 Acuity, both	10–15	20/20 or better
4 Acuity, right	10–15	20/20 or better
5 Acuity, left	10–15	20/20 or better
6 Depth	B–H	†
Near Point		
1 Acuity, both	10–15	20/20 or better
2 Acuity, right	10–15	20/20 or better
3 Acuity, left	10–15	20/20 or better
4 Phoria, vertical	3– 8	1.0 left hyperphoria—1.0 right hyperphoria *
5 Phoria, lateral	3–14	7.5 esophoria—9.0 exophoria *
Sight-Screener		
Far Point—Red Series		
1 Binocular vision	4 letters	Simultaneous binocular vision
2 Acuity, right	20/20–20/10	20/20 or better
3 Acuity, left	20/20–20/10	20/20 or better
4 Acuity, both	20/20–20/10	20/20 or better
5 Depth	D–E	90%–105% †
6 Muscle balance, vertical	2– 6	1.0 right hyperphoria—1.0 left hyperphoria *
7 Muscle balance, lateral	8–20	7.0 esophoria—5.0 exophoria *
Near Point—Black Series		
1 Binocular vision	4 letters	Simultaneous binocular vision
2 Acuity, right	20/20–20/10	20/20 or better
3 Acuity, left	20/20–20/10	20/20 or better
4 Acuity, both	20/20–20/10	20/20 or better
5 Depth	D–E	90%–105% †
6 Muscle balance, vertical	2– 6	1.0 right hyperphoria—1.0 left hyperphoria *
7 Muscle balance, lateral	7–24	8.0 esophoria—9.0 exophoria *
Telebinocular		Manufacturer's Standard
Far Point		
2 Vertical Imbalance	1– 1	0.5 right hyperphoria—0.5 left hyperphoria *
3 Lateral Imbalance	8–10	1.75 esophoria—3.25 exophoria *
4 Fusion	3, or 4 then 3	Fusion achieved
5 Usable Vision right	5–10	20/25 or better
6 Usable Vision left	5–10	20/25 or better
7 Stereopsis	9–12	†
Near Point		
10 Lateral Imbalance	4– 6	2.81 esophoria—4.70 exophoria *

11 Fusion	3, or 4 then 3	Fusion achieved
12 Usable Vision right	13–22	20/25 or better
13 Usable Vision left	13–22	20/25 or better
14 Usable Vision both	13–22	20/25 or better

Study Standard—Sixth Grade

Far Point		
2 Vertical Imbalance	2– 2	1.0 right hyperphoria—1.0 left hyperphoria *
3 Lateral Imbalance	7–11	4.25 esophoria—5.75 exophoria *
4 Fusion	3, or 4 then 3	Fusion achieved
5 Usable Vision right	8–10	20/18 or better
6 Usable Vision left	8–10	20/18 or better
7 Stereopsis	10–12	†
Near Point		
10 Lateral Imbalance	3– 7	6.56 esophoria—8.44 exophoria *
11 Fusion	3, or 4 then 3	Fusion achieved
12 Usable Vision right	14–22	20/22 or better
13 Usable Vision left	14–22	20/22 or better
14 Usable Vision both	14–22	20/22 or better

Study Standard—First Grade

The same as sixth-grade study standard with the following exceptions:

Far Point		
5 Usable Vision right	4–10	20/28 or better
6 Usable Vision left	4–10	20/28 or better
Near Point		
12 Usable Vision right	11–22	20/28 or better
13 Usable Vision left	11–22	20/28 or better
14 Usable Vision both	11–22	20/28 or better

* Muscle balance (phoria) is measured in prism diopters.

† True values for measurements of depth are available only for the Sight-Screener Test of depth, which is based on the Shepard-Fry Scale.

RESULTS

Table 1 shows the per cent of students correctly referred and the per cent incorrectly referred by the screening procedures as administered by the specified testers. A "correct referral" is a referral by a screening test of a student whom the ophthalmologist found to need referral. An "incorrect referral" is referral of a student who is not referred by the ophthalmologist.

At the top of Table 1 is shown the per cent of students referred by the ophthalmologist. Below in the same column are shown the correct referrals by the screening procedures. The next column shows incorrect referrals. Thus we see that the ophthalmologist referred 31 per cent of the sixth-grade students. The nurse's Ortho-Rater Test referred correctly 25 per cent, about five-sixths of those it should have referred. The difference between 31 per cent and 25 per cent represents underreferrals—6 per cent of the students tested. At the same time 32 per cent of the students were referred incorrectly. By adding 25 per cent and 32 per cent we find that with this procedure the nurse referred 57 per cent of the students she tested, and that slightly less than half of those she referred actually needed care.

The data are of course subject to sampling errors but indicate the degree of agreement found between the ophthalmologist and the testing procedures.

Examination of Table 1 shows that

TABLE 1

Per cent of Students Correctly and Incorrectly Referred by Screening Procedures

Test	Tester	Per cent of Sixth-Grade Students Referred		Per cent of First-Grade Students Referred	
		Correctly	Incorrectly	Correctly	Incorrectly
Clinical Examination	Ophthalmologist	31		23	
Ortho-Rater	Nurse	25	32	*	
	Technician	24	29	*	
Sight-Screener	Nurse	23	31	*	
	Technician	24	23	*	
Telebinocular (Manufacturer's standard)	Nurse	23	38	20	51
	Technician	24	33	18	29
Telebinocular (Study standard)	Nurse	24	33	17	37
	Technician	23	27	15	18
Snellen (high std.) + Judgment and Near Vision (high std.)	Teacher and Nurse †	23	28	18	35
Snellen (high std.) + Judgment	Teacher	21	24	16	25
Massachusetts Vision	Nurse	18	12	15	16
	Technician	20	11	15	16
Snellen (high std.) and Near Vision (high std.)	Teacher and Nurse ‡	20	15	16	24
	Technician	18	8	14	13
Snellen (high std.) and Near Vision (low std.)	Teacher and Nurse ‡	17	7	15	11
	Technician	14	3	11	7
Snellen (high std.)	Nurse	14	6	12	8
	Technician	14	2	11	7
	Teacher	15	6	13	9
Judgment	Teacher	13	19	10	19
Near Vision (high std.)	Nurse	13	11	13	30
	Technician	11	7	12	8
Snellen (low std.)	Nurse	6	1	5	–
	Technician	7	1	4	1
	Teacher	8	2	4	1
Near Vision (low std.)	Nurse	7	2	6	4
	Technician	5	1	4	1

* Not administered to first grade.
† Snellen and Judgment by teacher, near vision test by nurse.
‡ Snellen by teacher, near vision test by nurse.

there is a low degree of correspondence between the referrals by any of the screening procedures and the referrals by the ophthalmologist.

In general, the greater the number of correct referrals, the greater the number of incorrect referrals. Procedures that refer only a small proportion of the students referred by the ophthalmologist give relatively few incorrect referrals, but those that refer more than two-thirds of the students who really need care give a high proportion of incorrect referrals. Also the greater the number of measurements involved in a procedure, the higher is the proportion of both correct and incorrect referrals.

The Ortho-Rater, Sight-Screener, and Telebinocular Tests correctly referred 23 to 25 per cent of the sixth-grade students, or about three-fourths of the 31 per cent referred by the ophthalmologist. This is a high proportion of correct referrals as compared with most of

the other procedures. But these tests referred incorrectly an even larger number of students, about 30 per cent of all sixth-grade students. The total referrals amount to at least half the students tested.

When the manufacturer's standard for referral is used with the Telebinocular, correct referrals of sixth-grade students are about the same as those by the Ortho-Rater and Sight-Screener, but there are slightly more incorrect referrals. With the Study standard, the correct and incorrect referrals are both in about the same proportion as those by the Ortho-Rater and Sight-Screener.

Telebinocular testing of first-grade students by the technician gave results very similar to those he obtained for sixth grade, but with somewhat fewer incorrect referrals, especially when the Study standard for referral is used. The nurse's Telebinocular Test referred many more students from first grade than did the technician's, and most of these were incorrect referrals.

The difference between the results obtained by the nurse and those obtained by the technician suggests that Telebinocular testing of first-grade students can only be done efficiently by a tester who has had considerable experience in such testing.

The combination of three procedures —high standard Near Vision Test, high standard Snellen Test, and Teacher Judgment—gives results similar to those obtained with the Ortho-Rater, Sight Screener, and Telebinocular. About three-fourths of the students who need care are referred, but the number of incorrect referrals exceeds the correct referrals. Incorrect referrals of first-grade students are especially high—35 per cent of the entire class and about twice the number of the correct referrals.

The Massachusetts Vision Test, and the combination of high standard Snellen with Teacher Judgment, both correctly refer about two-thirds of the students who need care. While this proportion is not quite so high as was obtained with most of the procedures discussed previously, there are fewer incorrect referrals. This is particularly true of Massachusetts Vision Test incorrect referrals which, for sixth grade, are between half and two-thirds of the number of correct referrals, while for the first grade correct and incorrect referrals are in about equal proportions.

The nurse and technician are apparently equally efficient in administration of the Massachusetts Vision Test.

The correct referrals by a combination of the high standard Snellen and high standard Near Vision Tests are about the same as those by the Massachusetts Vision Test. The technician referred fewer students incorrectly with this combination of tests than with the Massachusetts Vision Test, but the nurse had more incorrect referrals from the Snellen-Near Vision combination.

The nurse's low standard Near Vision Test, combined with the teacher's Snellen, gives a few more referrals than the Snellen alone, but they are about equally divided between correct and incorrect referrals. The only effect of adding the technician's referrals by the low standard Near Vision Test to those by his Snellen Test is an insignificant increase in the incorrect referrals as compared with the Snellen alone.

The three different testers all obtained very similar results with the Snellen Test. When the high standard is used for referral, the Snellen Test correctly refers about half of the students referred by the ophthalmologist. It misses 10 to 20 per cent more of the students who need care than does the Massachusetts Vision Test, but it refers only about half as many incorrectly.

When the low standard is used for Snellen Test referral the incorrect referrals are reduced to only one or two

per cent of the entire group. But with this standard the Snellen Test selects for referral only about one-fourth or less of the students who need care.

Teacher Judgment as applied in this study referred correctly 10 to 13 per cent of the students, about two-fifths of those referred by the ophthalmologist. But it referred incorrectly a considerably larger number—19 per cent of all the students tested. This is partly responsible for the high proportion of incorrect referrals from the combinations of Teacher Judgment with other tests which have already been discussed.

Those who advocate inclusion of a test of near vision in a screening program suggest that it be used in combination with other tests, not as an independent screening procedure. It is interesting therefore to find that the high standard Near Vision Test alone refers correctly more students than the low standard Snellen Test and almost as many as the high standard Snellen. It gives more incorrect referrals, however, and in first grade there is less consistency in the results obtained by the different testers.

The Near Vision Test, low standard, refers only about one-fourth or less of the students who need care. As has already been indicated, it adds little or nothing to the efficiency of the high standard Snellen Test when the two are combined.

TIME STUDY

To obtain data on the time required to administer the screening procedures, two testers were timed while testing groups of seventh- and second-grade students. Conditions were arranged to simulate those of a screening program in a school.

Since the time required for getting the student settled in the proper position for testing and that needed for recording the measurements may vary with different procedures, the time for each test was measured from the moment when a student, readily at hand, was called by the tester to the moment when the next student was called. Identifying data had been entered on record forms by assistants, so the tester recorded only the test measurements.

The methods of administering the Telebinocular, Ortho-Rater, and Sight-Screener Tests were the same as elsewhere in this study. The Massachusetts Vision Test was considered completed at any point where the student gave an unsatisfactory response, and the simple record form usually used for recording results of this test was substituted for the more elaborate form used in other parts of this study.

A separate Snellen Test was not timed, but by timing separately the first part of the Massachusetts Vision Test an approximate measure was obtained of the time needed for a test in which the student is required to read only one or two critical lines of a Snellen Chart. Probably a few seconds longer would be needed for a Snellen Test since the time measured for the first part of the Massachusetts Vision Test does not include dismissing the students.

Testing was done by two experienced testers. The knowledge that they were being timed influenced them to work rapidly, so they may have set a pace somewhat faster than could be maintained over a longer period of routine testing.

The findings from the Time Study are presented in Table 2. For seventh grade the results obtained by the two testers differ significantly, but the differences were small and probably not of practical importance. For second grade the results obtained by the two testers were very similar and are therefore combined in the table.

Differences in the time required to administer the Ortho-Rater, Sight Screener, and Telebinocular Tests are probably of little practical importance.

TABLE 2

Time Required To Administer Specified Tests

	Seventh-Grade Students					
	Tester A			*Tester B*		
	No. of Students	*Mean (Minutes)*	*Range (Minutes)*	*No. of Students*	*Mean (Minutes)*	*Range (Minutes)*
Ortho-Rater	20	5.6	4.2–7.0	20	5.8	4.0– 9.8
Sight Screener	20	5.8	4.6–8.0	20	7.1	4.5–10.6
Telebinocular	20	6.3	5.0–8.3	15	6.5	4.0–10.7
Massachusetts Vision	30	1.7	0.6–3.1	30	2.6	0.5– 4.5
Part 1 of Massachusetts Vision	30	0.9	0.5–1.4	30	1.2	0.5– 2.8

	Second-Grade Students		
	Testers A and B		
	No. of Students	*Mean (Minutes)*	*Range (Minutes)*
Telebinocular	40	8.1	5.6–11.3
Massachusetts Vision	60	2.8	0.9– 5.0
Part 1 of Massachusetts Vision	60	1.2	0.5– 3.3

But it takes two to three times as long to give these tests as to give a Massachusetts Vision Test, and the total Massachusetts Vision Test requires about twice as much time as Part 1 alone.

DISCUSSION

It is evident from the data reported that none of the vision testing methods studied provide more than a rough screening procedure.

The findings of the study show what may be expected from the various screening methods, but they do not permit a conclusion that any one procedure or group of procedures is superior to the others. The screening program that is best in one situation may be less suitable for another.

The choice of a procedure will be determined partly by the purpose of the program. In one situation, as with the testing of poor readers, the purpose may be to obtain the maximal assurance possible that the students who are not referred do not have visual defects. In this case the procedures that give the highest per cent of correct referrals might be preferred, even though they result in a large proportion of unnecessary referrals.

In another situation it may be preferable to use a procedure that gives fewer overreferrals even though it misses more of the students who should be referred.

Recognition that any procedure which refers half or more of the students who need care will give a high proportion of unnecessary referrals may point to a need for education of the community as to what can be expected from a screening program. School health authorities and eye specialists can cooperate in helping parents to understand this. Testers, nurses, teachers, or anyone who informs parents of the results of a screening test should be well informed as to what a referral by that test may mean and should make this clear to the parents. Positive statements that a child has a visual defect are not justified on the basis of a screening test and may destroy confidence in the whole program.

In the study the different testers obtained fairly consistent results on sixth-grade students with all of the tests, which seems to suggest that it is not necessary for the tester to have elaborate training in the testing procedure or long experience with it in order to test this age group successfully. With first-grade students the same was true for the Snellen and Massachusetts Vision Tests,

but there was less consistency in the results obtained by the nurse and technician from Telebinocular and Near Vision Tests at this age level. It may be a characteristic of these tests, that they give less consistent results on beginning readers. Or it may be that these tests can be given to beginning readers more successfully by a tester with considerable testing experience.

In general, the results obtained from the testing of first-grade students are enough like those for sixth-grade students to support the belief that screening programs for beginning readers are worth doing.

It is obvious that the way is still open for considerable improvement in procedures for screening elementary school children for visual defects. The many factors involved make the problem extremely difficult. The efficiency of a screening procedure depends in part on the visual functions tested and the accuracy of the methods of measurement possible under ideal conditions and in part on the degree to which the tests are suited to the nonvisual capabilities and motivations of the subject. A child may, for example, see a test target perfectly but give an unsatisfactory response if he does not understand what is expected of him, if a sense of frustration leads to poor coöperation, or if the duration of the procedure exceeds his normal attention-span. The efficiency also depends on whether or not the procedure is simple enough not to require elaborate training of the tester.

Selection of the most appropriate standards for referral is another factor that affects the efficiency of a screening procedure. The method used in this study for developing such standards should—when the later report makes the details available—provide a basis for further study in this area.

It is hoped that the findings of this study will not only be of immediate usefulness to school health authorities in the selection of the screening procedure most appropriate to their programs and in understanding the probable significance of the results of the tests, but that they will also help to build the foundation for further investigations.

ACKNOWLEDGMENTS—Space does not permit making individual acknowledgment of the important contributions made by the many persons who participated in the conduct of this study. Special mention should be made, however, of the coöperation given by the St. Louis Board of Education and its administrative staff, particularly the director and other members of the Division of Health and Hygiene, and by the principals, teachers, and students in the schools in which the study was conducted. This coöperation left nothing to be desired and without it the study would not have been possible.

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Reprints of these references are available, while the supply lasts, from the Children's Bureau, Federal Security Agency, Washington 25, D. C.

A description of the methods of this study and tabulations of basic statistical data will appear as a publication of the Children's Bureau.

Housing and Living Arrangements for the Aged*

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THE provision of adequate housing accommodation is one of the most stubborn socioeconomic problems of modern industrial nations and the pressure of an aging population, among other things, is bringing the problem of housing and living arrangements for the aged increasingly to the fore. Some progress has been made, but it seems apparent that so far neither economic incentives nor social priorities have been strong enough to insure, even on a minimum basis, satisfactory living arrangements for a large sector of this group. While the needs of elderly persons in this field must be viewed as a part of the needs of the general community, more and more the special connotations of the problem for older persons are being recognized.

EFFECTS OF AGING OF POPULATION

The increase in the number and proportion of older people in many countries of the Western World has in recent years focused greater attention on their housing needs. A review of age distribution patterns for several decades past and an assessment of future population trends in the United States give an indication of the increasing share of housing which is required for the aged now and which will be required in the years ahead. Within the past 50 years the number of persons 65 years of age and over has increased from slightly over 3 million[1] to more than 12 million,[2] and in the next 25 years it will increase to an estimated 17 or 18 million persons.[3] Those 65 years of age and over represented only 4.1 per cent of the total population in 1900, while in 1950 they represented 8.2 per cent. Future estimates show this trend continuing for several decades with the proportion rising to about 10.8 per cent by 1975.[4] While the increase in numbers is significant in itself in terms of present and future requirements for suitable housing and living arrangements for older persons, the fact that the proportion of aged is increasing so rapidly raises fundamental questions concerning the economic base which must support the provision and maintenance of this housing accommodation.

INCOME STATUS OF THE AGED

The income status of a large proportion of older people is similar to that of the lower income groups in the general population which means that adequate living accommodation is, for financial reasons alone, often placed beyond their reach. A study, based on United States data for the year 1948, indicated that a somewhat greater number of aged persons were in the low-income groups than would be expected from their proportion in the population.[5] Among the 11 million persons aged 65 years and over, about 3 million had no money income, about 2.5 million had a money income of less than $500 a year, and

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some 2.3 million had a money income between $500 and $1,000 a year. Aged income recipients in the class $1,000 to $2,000 numbered perhaps 1.6 million.

HEALTH STATUS OF THE AGED

The higher incidence of illness, especially long-term illness and chronic disease which characterize this group, also fundamentally affects the scope and nature of the problem. The prevalence rate for chronic disease and impairment rises rapidly with age and is particularly high in the older age groups. National Health Survey data show rates per 1,000 persons of 159 and 221 for the age groups 25–34 and 35–44, respectively, compared to rates of 466 and 522 for the age groups 65–74 and 75–84.[6] The data also indicate how the frequency rates for those disabled for an entire 12-month period rise rapidly with age, almost half being 55 years of age or over.[7] The health factor involves not only the broader issues of types of facilities required, ranging all the way from institutional care to normal housing accommodation, but also the location and design of these facilities and the arrangements relating to health and welfare services.

TYPES OF ACCOMMODATION

Most elderly people desire the personal privacy and independence of their own accommodation, and by far the largest proportion of aged persons in the United States do live in accommodations of their own. Some information on the adequacy of dwelling units occupied by older people has been provided by the 1950 housing census in which it was estimated that only about 64 per cent of the dwelling units occupied by nonfarm households, headed by persons over 65, had a private toilet and bath, hot running water, and were not dilapidated. By these criteria, housing conditions of the aged were worse than for the general population, which had a corresponding figure of 70.4 per cent. About 675,000 of the dwelling units occupied by heads of households over age 65 were dilapidated and about 1,200,000 had no private flush toilet or bath.[8]

Particularly for those who have their own accommodation, there is the difficulty of planning a dwelling which will remain suitable throughout the family cycle. Many large homes built to house a growing family are now occupied by only one or two elderly people, and they are in no way designed to meet the present requirements of the occupants. This variability of needs throughout the years of life is frequently not fully appreciated by the aged themselves, and even when it is recognized it is often difficult for them to adapt their accommodation to changing circumstances.

Almost a quarter of the senior citizens in the United States are living with children or relatives, but it is fair to assume that many of these elderly persons would prefer to have independent accommodation and that this view would be shared by the younger generation. Changing cultural patterns, among other factors, tend to restrict the possibilities for mutual accommodation between the generations and to make this solution less satisfactory and acceptable. Both the decline in the size of households, from an average of 4.76 persons in 1900 [9] to 3.4 in 1950,[10] and high construction costs, have made for less space and fewer rooms in new housing. In addition, the usefulness of the first generation in the daily living routine of the second and third generation, except under special circumstances, has been limited by industrialization and urbanization on the one hand, and apartment dwelling with simplified living on the other.

A substantial number of older people live in rooming or boarding houses, and in many instances, particularly in large cities, these quarters are far from satisfactory for healthful living. Quite often

these rooms, taken not by choice but because of the lack of adequate financial resources or suitable family accommodation, are in slums or deteriorating areas of the community. While some of the facilities and services for the boarding of aged persons are provided by private nonprofit organizations, others are provided under less favorable circumstances. In many instances, aged persons room and board in private households where they must share inadequate quarters of low-income families who must count upon this form of supplementary income, while in other cases they stay in establishments which care for old people, usually pensioners, as a business and for profit. Some progress has been made in various states and provinces in the United States and Canada in the licensing and inspection of these homes to see that they meet required standards, but much remains to be done if these older people are to be insured protection.

Apart from the housing of aged persons within the individual units in the community, there will continue to be a growing need for the residential home. There are many who require a measure of domiciliary and protective care and who, for financial and domestic reasons, can only find it in this kind of a home. Many of these old people welcome and need the comfort, convenience, and companionship of a properly run home. Even with existing services and facilities, many of which are poor and antiquated, applicants usually far outnumber vacancies in homes for the aged.

In recent decades, however, the traditional concept that persons who have reached the doorstep of the home for the aged should be indiscriminately placed in large, desolate barrack-type institutions, away from the public conscience, has been rapidly breaking down. Current trends in this field of institutional care are to make the aged person "feel at home," and this is being achieved partly through a new approach to the location and design of these homes. The idea of large institutions with open wards and dormitories is being abandoned in favor of smaller dwelling units and individual rooms; the former improves group congeniality and the latter permits privacy.

EUROPEAN PROJECTS

The development of housing for the aged in many of the European countries is rooted in a tradition of public housing and in most instances it has supplemented state provisions for old age income security. In addition to assistance from public funds, much has been achieved by coöperative associations, religious orders, and voluntary agencies.

Back in 1891, Denmark laid down in its old age pension legislation that recipients should not be placed in poor houses, but that special accommodation should be provided for them. However, it was not until two or three decades later that the Danish Government and municipal authorities took steps to provide financial assistance in various forms to housing. More than one-third of all municipalities, both rural and urban, now have homes exclusively reserved for pensioners. Most of these homes are small and avoid an institutional atmosphere; usually the privacy of an individual room, containing the pensioner's or couple's own furniture is combined with communal services of a high order. Copenhagen, most of the provincial towns, and several of the municipalities have constructed and now operate modern apartment blocks containing small low-rental apartments for aged persons.

In Great Britain, about one per cent of the two and a half million dwellings provided in the period 1919 to 1938 under public housing projects were specifically designated for old people. From 1938 to the outbreak of the war, the number of these dwellings built in-

creased from 29,600 to 48,800; but with the outbreak of hostilities construction ceased and during the war there was wide destruction wrought by enemy action.[11] However, under the National Assistance Act passed in 1948, important provision was made for an expansion of housing facilities for the aged as a part of a general housing program which is organized on a national scale, but administered, as in the past, by the local authorities. In these dwellings for older people, which are run on the lines of hotels, all residents pay the same rate for their board and lodging. Old people of all incomes are equally entitled to reside there; those who can afford the full charge pay it themselves while those whose means are not sufficient to pay this charge may receive an allowance under the National Assistance program. Further, a valuable contribution toward alleviating the general housing shortage is being made through the conversion of large homes for the purpose. As aged individuals and couples are able to take up residence in this new accommodation specially designed for them, the larger housing units which they had previously occupied are released for families with children.

An experiment which has attracted much interest in England is the attachment of a small self-contained housekeeping unit to the single family dwelling, called the "plus granny flat." The unit has a bed-sitting room, bathroom, cooking, and laundry facilities, and a separate entrance offering the privacy of a self-contained dwelling. "The housekeeping annex may serve as an income-producing unit, or as a suitable home for adult children, single or married, while the senior family live in the larger home during the expansive part of the family cycle. On retirement, the senior family, or widowed parent, may move into the annex now using the main house as an income-producing unit."[12] Such a combination provides a measure of economic security and mutual assistance between different generations and protects the independence and privacy of each group.

Sweden, the Netherlands, Germany and Switzerland have developed a variety of interesting housing projects for older people. They include large modern apartment buildings, particularly in densely populated areas, smaller one- and two-story apartment units, single and duplex bungalows, large cottage units, and hostels containing a common living room, dining room, and recreational facilities, with bedrooms to accommodate one, two, and sometimes more persons. A large number of nursing homes are available, and in hostels and rest houses provision is often made for a small sick bay. Some of the apartment blocks have arrangements whereby domestic and nursing services can be obtained. Many of the newer general housing projects are designed to include provision for the special needs of older people.

HOUSING PROJECTS IN CANADA AND THE UNITED STATES

Although the main emphasis of public housing programs in the United States and Canada has been on family dwelling units, a limited number of projects have made provision for married elderly couples. The needs of aged individuals, who represent more than 50 per cent of the persons 65 years and over, have received little or no consideration in the drafting of federally financed housing schemes in the two countries.

The National Housing Act in Canada has been used to a limited extent in recent years to provide housing for older people, in communities such as Burlington, Owen Sound, and York Township in Ontario. The first project undertaken under the limited-dividend section of this Act was at Burlington, known as the Brant Court Apartments; the three-story brick building provides low-rental

accommodation for old age pensioners, widows receiving mothers' allowances, and veterans with partial pension. A similar type of project has since been completed in Owen Sound and another is under way in York Township, Ontario.

Communities in the Province of British Columbia have shown the greatest interest in the housing for the aged. In the last few years, centers such as Langley, Surrey, Kelowna, Nelson, Kimberly, Prince George, Saanich, Burnaby, New Westminster, and Vancouver have undertaken projects to provide housing for their senior citizens. An interesting development in this province is the work of a number of national groups—the Danish, Icelandic, Norwegian, and Swedish people—who have provided dwellings for their aged countrymen as well as other older persons. The Danish people pioneered in the field with the establishment of their home "Dania." It has a large and comfortably furnished living room which accommodates the guests and their visitors, a large dining room, and attractively furnished bedrooms for one, two, or three persons. A few small cottages for married couples have been built on the grounds to provide the necessary balance in types of accommodation.[13]

Some of the church groups have also been active in this field. For example, the United Church at Burnaby has made considerable progress in developing housing accommodation for the aged. A central unit accommodates 24 persons and includes 12 single and 6 double rooms, with common living room, dining room, and recreational facilities. The unit is now being extended to include an additional 24 single rooms. In addition to the central unit there are 8 duplex cottages and more are planned. Each cottage which rents for $25 a month for a married couple has 2 self-contained ground floor apartments, which include a living room, kitchen with a dining nook, a utility room, and a bathroom. While general landscaping is looked after by the Church Committee, the cottage tenants maintain small flower gardens just outside the cottages and a general garden plot is also set aside for their use. Several other housing developments for older persons in British Columbia, such as the New Vista Society in Burnaby and the Joan and Darby cottages in New Westminster, have adopted the duplex cottage.

There is no set pattern of financing for the various housing developments for the aged in Canada. In most instances, the initiative for raising funds for the project has been taken by church organizations, service clubs such as the Kiwanis and Lions, groups such as the Scandanavian organizations, and other community organizations. The National Housing Act has assisted the financing of some projects through loan arrangements and in a number of instances provincial grants and financial assistance from cities, towns, and counties have been made available to encourage this type of accommodation.

In the United States there have been a variety of significant developments in specialized apartments for the aged, cooperative houses and small villages for the aged. The Tompkins Square House in New York City is a 5-story apartment building which provides comparatively independent living facilities with 44 single rooms and 8 2-room furnished apartments. It contains a cafeteria, a general living room, a laundry, a roof garden, and recreational facilities. This apartment house attempts to simulate ordinary living conditions for the people who rent apartments there; the tenants direct their own lives and activities, but they have on call in the house a resident director, who can provide social and health advice.

In New York, also, is the Home for Aged and Infirm Hebrews which accommodates about 400 well old people and which has developed an apartment

project in close physical proximity. One of the important features of this apartment project is its association with hospital facilities as well as with the Home. Medical supervision of the residents is thus afforded by the Home and hospital staffs, and the residents can be provided with custodial or hospital care if the need arises. This integrated program offers special services to residents such as a visiting physician, visiting nurses, social workers, housekeeping aides, and other volunteer aides.[14]

Coöperative housing for small groups of elderly people, mostly single persons, has been developed for recipients of old age assistance in the State of Washington as a community project by such groups as fraternal, business and professional organizations, welfare councils, and the Old Age Pension Union.

A cottage colony plan for the aged was undertaken back in 1936 at Millville, N.J., as a WPA project. A small village for the aged planned on a cottage unit basis for single persons and married couples has been developed over the last several years at Orange Park, Fla., by the Loyal Order of Moose. There are 10 of these units, each a one-story cottage, containing 30 individual rooms, a community dining room and recreational facilities.[15] The New York Housing Authority, under a state scheme, has included in their Fort Greene Houses 50 self-contained units for single aged persons.

These projects do not by any means include all the housing developments that merit discussion, but they do illustrate the variety of housing accommodation already available.

LOCATION OF COMMUNITY HOUSING FOR THE AGED

In planning the location of housing for the aged, it is desirable to have their homes in a neighborhood which is easily accessible to transportation and to the social resources of the community, such as churches, a shopping area, and any recreational facilities which may be used by older persons. Well old people usually do not wish to be set apart from the rest of the community. Because of their age, many of them suffer from a sense of separation, and the more they can be made to feel that they are a part of the community the happier they will be. Many of the elderly desire and enjoy association with younger neighbors and there are many occasions when it is to their mutual advantage. The older persons often receive assistance from younger couples, especially during times of sickness, and in return sometimes provide useful services. While this proximity is desirable there are other advantages to be gained in setting aside a particular part of a new housing area, as is done in many instances in England, the Netherlands, and other countries, for accommodation for older people. This policy of "separation without segregation" is one which was recommended to the Ministry of Health in England by a special committee of the British Medical Association.[16] In the Netherlands, the decentralized system of housing elderly people has, in practice, proved most satisfactory. Small but attractive houses are built in small groups within a general housing development. By making these houses part of a large scheme, and allowing the resulting costs to be spread over the entire projects, housing associations used this system as a means of obtaining a lower rental for aged tenants without resorting to a special subsidy.[17]

In general, it is a sound policy in large cities to establish these dwellings in different localities so that in so far as possible old people need not be uprooted from the familiar surroundings to which they have become attached. However, in some instances, the inclination to remain in the same neighborhood may be grounded in habit, rather than in the reality of the situation. Over a period of time, a neighborhood often changes

to an extent that it becomes as strange to an older inhabitant as another part of the city. Many of these people could lead a happier life in a new location with other elderly people nearby who have similar interests and problems. The experience of community welfare workers indicates "that older people can find themselves again—with a new way of life—in a different neighborhood given proper encouragment and help in doing so." [18]

While the problem of land densities in built-up areas does not always permit much choice of location, it is desirable to insure that there are pleasant surroundings and that the grounds are large enough to provide a garden area for the use of the residents. When housing is erected in outlying areas away from the city, many of these difficulties are solved, but care must be taken to avoid other inadequacies which will accrue if elderly persons are isolated from important social resources o a community.

DESIGN AND EQUIPMENT

The essential accommodation suggested for elderly couples and elderly single persons varies, but it usually includes a kitchen, living room, bedroom, ample cupboard space, and sometimes a small utility room. Often a bed-recess off the sitting room is proposed, especially for single accommodation. Where a number of units are being constructed, provision is sometimes made for a few two-bedroom units, for cases where an elderly couple may have a dependent grandchild.

It is not possible here to discuss design and equipment of dwellings in any detail, but it may be useful to mention a few of the comments that architects, health and welfare workers, and others looking after the needs of the aged have made. It is generally found that older people require a *higher* level of temperature, and a comparatively *even* air temperature from floor to ceiling, as well as a heating system which requires a minimum of physical labor to operate. The greater incidence of visual impairment in advanced years means that special consideration has to be given to illumination requirements. The level of sinks and shelves, and the provision of other facilities, should be adapted to their special needs. Since accidents are one of the important hazards resulting in injury and death in this age group, special attention should be given to safety devices and the elimination of accident hazards. Grips and handrails should be placed at appropriate places; floors should be smooth but not slippery; steps at the threshold should be eliminated; stairs should be avoided, but if necessary, they should be limited to one flight, and provision should be made for handrails and extra illumination. The use of electric stoves is preferred to gas, wherever possible, and where it is necessary to use gas, special safety devices may be required for persons who have lost their sense of smell. These and numerous other suggestions are gradually becoming an accepted part of modern design in the adaptation of housing accommodation and facilities to the requirements of aged persons.

PSYCHOSOCIAL AND MEDICAL NEEDS

However, in insuring satisfactory living arrangements for the aged we must look beyond physical needs to their psychosocial and medical needs. This is sometimes a difficult area because the borderline between health and sickness is frequently and easily crossed in the later years of life. The incidence of acute and chronic illness is much higher among the aged than in lower age groups. Because the needs of older people often vary with the state of their health, and this variability of needs frequently militates against continuing suitable living arrangements, we must

develop a flexibility in the type and availability of accommodation that will facilitate the provision of sick care at one time, domiciliary care at another, and normal living arrangements at still another.

Much flexibility is lost because of the general shortage of facilities or, as in many localities, the absence of one or more of the types of accommodation needed for a balanced allocation of facilities. Since we are always dealing with limited accommodation, we require a form of rationing of that accommodation which places those in most urgent need in whatever quarters are available, sometimes without too much regard as to whether it is the right type of accommodation. Thus, within the limits of existing facilities there is need to emphasize the importance of the part played by the admission policy in maintaining desirable living arrangements. In the case of community housing for well old people, the tenant-selection policy is usually designed, among other things, to determine whether the applicant is able to perform, within reasonable limits, daily housekeeping tasks. In homes for the aged, it is more and more becoming an accepted policy that residents must be carefully chosen with a view to maintaining a pleasant and harmonious atmosphere in the home. A proportion of the residents will eventually become senile or otherwise mentally incapacitated and if they are not withdrawn or segregated the character of the home gradually changes. Since these homes usually have no special staff to provide anything beyond general health supervision, those with chronic illnesses or disabilities have to be excluded. The shortage of chronic and convalescent hospital beds on the one side, and of community housing accommodation on the other, thus develop pressures on the admission policy.

The lack of housing and inadequacy of living arrangements for the aged has undoubtedly placed greater demands upon limited hospital facilities. The effect of an aging population on increasing hospital utilization is most significant and has many ramifications. It is a common experience for patients to remain in hospital longer than they otherwise would have if they had had adequate living quarters to which they could return, with, perhaps in some cases, auxiliary services, such as visiting nurse care and domestic help. On the other hand, aside from general shortages, there has been a certain unbalance in hospital facilities, with insufficient provision for chronic and convalescent accommodation and, as well, a reluctance to provide the full range of diagnostic, therapeutic, and rehabilitative services for the aged and the chronically ill.

Many useful projects are under way in Great Britain and the United States to provide the right kind of accommodation and services for the variety of circumstances faced by older persons who are not well. The British Medical Association has sponsored a threefold plan which includes a geriatric department in the hospital, long-stay annexes to the hospital, and residential homes for those not in need of regular medical or nursing care. The Association defines a geriatric department as some wards in a general hospital exclusively reserved for elderly patients—but not a dumping place. These are wards where every patient is undergoing either investigation or active treatment and rehabilitation. The function of the long-stay annex, which is under the supervision of the geriatric department, is considered as the provision of nursing for those the geriatric department could not cure. The residential homes or hostels provide accommodation for those who have recovered, but have nowhere to go, or are too frail to manage homes of their own.[19]

In discussing another aspect of this

question of health care, Dr. Fraser Brockington has suggested that "the admission of sick aged to hospital needs to be done more scientifically as a partnership between the hospital and the health department. Except in the case of acute illness, when immediate admission is necessary, there should be a close study of the background picture to determine the need for hospital care and to establish the obligation of the relatives. This may have the effect of securing adequate home care without admission to hospital and it can secure the admission of cases in order of priority in relation to the home background. The discharge of cases can be organized along the same lines." [20]

The importance of voluntary effort in making for satisfactory living arrangements for old people must not be overlooked. Perhaps one of the leading examples of the various contributions of voluntary enterprise in this field is the work of the National Old People's Welfare Committee in Great Britain and the nation-wide network of associated local, county, and regional committees, which have made a major contribution to the task of creating better living conditions for the aged.[21]

Insuring satisfactory living arrangements for older people in the years that lie ahead will be a matter of developing a wide range of health and welfare services, both public and voluntary. In addition to an extension and improvement of facilities and a greater integration of services and the use of facilities, there is need to build, at the grass roots level, a corps of trained and experienced health and welfare workers.

The welfare worker has the task of helping the older person to live a happier and more interesting life. This involves the building up, in coöperation with older persons themselves, of a variety of interests and activities—social clubs, recreational centers, holiday centers, book and record library facilities, crafts, etc. It means, too, making available friendly assistance and counseling when problems arise in family relations and financial matters, as well as help, on occasion, with such matters as shopping and letter writing. The worker needs the assistance and active participation of a voluntary organization which is interested in working with and for older persons. Finally, the welfare worker is the placement officer who tries to meet the individual's accommodation needs from the variety of housing resources for well old people.

The health worker's task is twofold: preventive health and health care. The health worker, whether in the community home for aged, or in private homes, or rooms of elderly persons, can promote health education, especially in matters of personal hygiene and diet and make referrals to public health clinics. The worker is the health officer's agent in the preventive health field. At the same time, for short-term illnesses requiring home care, the health worker, working under the supervision of the physician, provides the visiting nursing care service.

BASIC ISSUES

While much has been done in this field of housing and living arrangements for the aged, it is fair to say that no country, as yet, has been able to deal fully and adequately with the situation. Our chief disadvantage now is not the lack of knowledge in regard to questions of location and design of accommodation and so on, although more research and a greater dissemination of information are undoubtedly needed. What we do urgently require in the way of research is more detailed knowledge concerning the present and future needs for the various types and kinds of living accommodation. Perhaps the main deficiency to date, has been that the volume of construction of these modern facilities has been too small to meet

minimum needs and to cope with the growing requirements of an aging population. And in the field of health and welfare services our greatest weakness is in the shortage of trained personnel.

In the long run, these difficulties can only be surmounted through more adequate financial support for this sector of our domestic life. Part of the answer will be found in increased average man-hour productivity in future years, but the balance of the problem may have to be met by a longer productive life for older workers [22] and a willingness on the part of the community as a whole to allocate a greater amount and a greater share of economic resources, than heretofore, for the maintenance of the non-productive aged.

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The State Health Department—Services and Responsibilities

Draft of a proposed official statement of the American Public Health Association, published by the Committee on Administrative Practice.

This draft is published for the information of Fellows and members and in order to promote discussion.

Foreword

The American Public Health Association, in preparing this statement as a companion to its statement on "The Local Health Department—Services and Responsibilities," has attempted to summarize as completely and concisely as possible those services and responsibilities which can be incorporated into efficiently organized and adequately staffed state health departments. This is not a statement of an idealistic philosophy, but a summary of a working plan, model in its structure, yet sufficiently flexible so that, within the limitations of existent legislation, state health departments may adopt it in a form modified to fit their particular situations. While no state health department at this time encompasses all of these services and responsibilities, and while it is recognized that considerable variation will exist between different states, it is expected that gradual evolution, together with the passage of additional legislation, may bring about in many states an increasing scope of activity such as is described in this statement.

Originally advisory in nature, state health departments assumed additional operational responsibilities with the passage of time. State health departments were gradually made more responsible until now many have almost plenary powers in various fields of health.

The states are sovereign units of government. Their authority in the health field is derived from the state's general powers to legislate for the protection of the public safety, health, and morals. Local governmental units, including county and municipal health departments, derive their authority and power from either primary local power or from the state constitution and laws. In most instances, health departments of county and municipal governments act as independent units, except for such advice and consultation as they may receive from the state through technical consultations, grant-in-aid programs, and coöperative agreements. In a few states, however, a more definitive relationship exists between the state and the local health departments in which the local health department may be, in fact, a branch of the state government and receive its direction and financial supervision directly from the state.

The theory and practice of public health have expanded to include not only the prevention of the onset of illness, but also, through the use of mass technics, the prevention of the progress of disease, of associated complications, and of disability and death. The sharp decrease in mortality and morbidity rates from infectious diseases has caused a marked change in the age distribution of the population and in the spectrum of our health problems, including greater emphasis on the attainment of optimal health. Consequently, the organization

and functions of a state health department have undergone considerable change as a result of the advancement in science and in health practices.

BASIC SERVICES AND RESPONSIBILITIES

In developing the state health program, the state health officer should seek the advice of the medical, dental, and other professional groups concerned, as well as the public. In general, the responsibility for a state public health program rests upon many individual groups and agencies. Some of these are:

a. The state health department
b. Other official departments of the state government, such as departments of mental health, welfare, institutions, education, and agriculture
c. Medical, dental, and allied professions
d. Hospitals
e. Voluntary health agencies
f. The public and its elected representatives

The health department must coördinate the work of all agencies dealing with public health in the state and should obtain the coöperation of physicians, dentists, and other professional groups in making available to the people the latest advancements in the field of preventive medicine and public health.

In order to achieve an effective program, the state health department should provide the following general types of services. While no state health department encompasses all these services and responsibilities, the trend is toward an increasing scope of activities such as are described in this statement.

1. *Administration*

The administration of the departmental programs, including: the departmental subdivisions and policies as provided by statute and by regulations of the department within the limitations of budgetary provisions; institutions and hospitals; district or regional offices; clinics; specific or general medical care programs; hospital survey and construction programs; laboratories, both diagnostic and those producing biologicals; in a few states the direct administration and supervision of local health departments, where such local health departments are a branch of the state organization; and more recently in nearly all of the states, the responsibility for the administration of the medical and health services and special weapons division of the state civil defense program; provision for only such direct services as are not reasonably included in the programs of local health departments or which, by law, are delegated to the state department of health.

2. *Promulgation of Health Rules and Regulations*

Promulgation of regulations or a sanitary (health) code having the force of law; and offering advice to the state legislature and to local health departments and other health agencies relative to proposed health legislation.

3. *Enforcement of State Health Laws and Regulations*

Issuance of such licenses and permits as may be required by law. Conduct of hearings relative to the taking of land for the public health, or relative to complaints or appeals over the decision of local boards of health, or in regard to the passage of rules and regulations. Supervision, review, approval, and inspection, such as the approval by the state health department of the construction of public water treatment plants and public sewage disposal plants, the inspection of milk pasteurization plants, food handling, manufacturing, and processing plants; review and approval of the health aspects of plans for the construction of schools and hospitals.

4. *State Program Planning and Policy Determination*

The study and appraisal of state health problems to formulate broad

plans and policies, with due consideration for local flexibility; the collection of data and the making of investigations relative to the conditions affecting the public health.

5. *Evaluation of Existing Programs*

Continual evaluation of existing state and local programs to assure the greatest possible degree of health protection and promotion for the people of the state.

6. *Assistance to Local Health Units*

The promotion of the development and maintenance of full-time local health units of sufficient population and of such area as can be sustained with reasonable economy and efficient administration. The establishment of standards of scope and performance of local health department activities. Financial assistance to local health departments which meet minimum standards of personnel and performance as established by the state in accordance with a plan and budget submitted to the state for approval by the local health department. The recruitment and training of personnel for state and local health departments.

7. *Health Education*

Consultation in community organization, preparation of educational materials, and dissemination of information as to the conditions affecting health, including basic information for the promotion of good health on the part of individuals and communities.

ORGANIZATION

Each state, territory, and province of the United States and Canada has a legally constituted unit of health administration in its organization. The protection and promotion of the public health in any state is of such importance that each state should have an independent department of health responsible directly to the governor.

The operation of a state health department depends to a large extent on the knowledge and skills of public administration, in addition to technical public health knowledge. The development of a professional point of view in public administration is a major advance of recent years. A body of knowledge and experience has been developed and recorded in the field of public administration, with which public health administrators must acquaint themselves and which they must use. The organization of the state health department must embody these cardinal requirements of good public administration.

The state health department is composed of:

a. The state health officer with his staff, who together comprise the administrative or executive section, and
b. The board of health which comprises the advisory or policy forming body.

The department can fulfill its responsibilities more effectively:

a. If it is adequately housed in a central location in close enough proximity to other state agencies to permit liaison
b. If adequate meeting facilities, including auditoriums, are available
c. If there are sufficient parking facilities and room for expansion

Housing of several state departments in a single building is most advantageous. The location of the state health department near other health facilities is of mutual benefit. A close association between a state health department and a school of public health, school of medicine, or a teaching hospital can be carried out only when the health department can operate its program without undue outside pressures.

Considerable variation of opinion exists as to the desirability of a single state agency with sole responsibility for the administration of all aspects of a state health program. Although some special activity in the health field may be the function of several departments,

the health department, because of its broad authority and the wide range of basic disciplines of its staff, appears to be the most appropriate agency to have supervision over all health activities of state government. The question arises as to how this supervision might be exercised. Unquestionably, coördination of the several related programs is facilitated when a maximum number of these health functions are brought under one budget, namely that of the state health department. Moreover, federal-state relationships are simpler when such an arrangement is feasible.

In many states, some of the health functions, such as mental health, food and drug inspection, crippled children services, hospital survey and construction, and institutional management are under separate departments. Whenever such separation occurs, a coördinated program cannot be developed unless there is complete liaison between the several departments. Interdepartmental coördination can be achieved through:

a. Staff conferences called by the chief executive of the state
b. Interdepartmental committees authorized by law or executive order, or formed voluntarily by the several departments in which the chairmanship is either determined by law or rotated among the several departments
c. Loan of personnel by the health department to other state agencies for the administration of their health programs
d. Advice made available by the state health department to other state agencies on request
e. Performance of certain services, such as laboratory analysis, or statistical tabulation for other state agencies, and
f. Development of written agreements between departments which outline the relative responsibilities of each department and the specific methods for coördination of their respective services

The Health Officer

The health officer is preferably appointed by the board of health or by the governor upon the recommendation of the board. He should be the executive officer of the department of health and the secretary of the board and serve for a definitive period of time not coterminous with that of the governor and preferably for a term of five to seven years. He should be eligible for reappointment. The qualifications of the position of health officer should be adopted by the board or by the state legislature. These qualifications should include:

a. Graduation from an approved school of medicine and licensure or eligibility for licensure to practise medicine in the state.
b. Whenever possible in all states, his experience and training should be such that he would be certified or eligible for certification in public health by the American Board of Preventive Medicine.
c. Whenever a physician who is certified in public health by the American Board of Preventive Medicine is not available, then one should be selected who has at least one year of postgraduate training in an accredited school of public health and at least three years of successful experience in a full-time administrative position in an acceptable health agency. (The question of successful experience and an acceptable health agency should be decided by the board of health.) In lieu of curricular training in an accredited school of public health, he should have a total of at least five years full-time successful experience in an acceptable health agency. Residence within the state prior to appointment should not be a requirement.

The salary of the state health officer should be determined preferably by the board of health and should be at a rate which would be sufficient to attract a highly competent and qualified physician who is a certified specialist in public health or qualified to become one, such income being comparable to that of other certified medical specialists in the state.

Board of Health

Every state health department should have a board of health serving as an advisory and quasi-legislative body. In some states, the board is vested with

administrative authority, such as policy forming, and may approve or appoint the health officer and other key personnel. In this instance, the health officer acts as its executive officer. The duties of the board may include:

a. Promulgating regulations
b. Holding hearings
c. Issuing licenses and permits
d. Reviewing plans, programs, budgets, and reports of the department

The membership of this board should be adequately representative of the medical and other professional groups and the public.

No single profession or business group should constitute a majority. The board, consisting of seven to nine members, should be appointed by the governor for staggered terms of office of five to seven years. The appointments should take into consideration the expressed interest and experience in the general field of health. Meetings of the board should be held regularly, at least quarterly, and preferably monthly. The board of health should elect its own officers and pass by-laws for the conduct of its meetings. Members of the board should be eligible for reappointment and should receive an honorarium and the necessary expenses for each day when attending meetings.

Personnel Policies

The health officer should appoint and discharge for cause a deputy who should have tenure. The health officer should be authorized to emply and discharge, in accordance with generally accepted good personnel practices, assistant health officers and other personnel. Such personnel practices should include:

1. *Recruitment plan* — There should be an aggressive recruitment plan whereby qualified individuals, regardless of race, color, creed, political affiliation, residence, or any other factor not important in job performance, are procured to fill vacancies.

2. *Merit system*—Objective competitive examinations, written and oral, or both, given by a merit system of personnel administration and a probationary period, should be used to select the best qualified of all available applicants for public health positions. Advancement should be on the basis of capability and meritorious service. There should be security of tenure, although provision should be made for termination of employment for nonproductiveness. A classification plan should be developed and should provide for detailed description of:

a. Positions, after job analysis
b. The qualifications in terms of training, experience and personal attributes necessary for job performance

The merit system must be so designed as to prevent undue outside influence. Employers should be permitted to select employees from a list of not less than three qualified persons.

3. *Compensation plan*—There should be:

a. A compensation plan, continually reviewed for adequacy, which provides substantial ranges between minimum and maximum salaries
b. Equal pay where the responsibilities, duties, and the education and experience requirements are comparable

Such a compensation plan for professional employees should be determined by the health department with the approval of the state personnel agency or by the personnel agency itself, and not by the state legislature. The salaries should attract and hold professional workers by comparing favorably with those paid by other agencies.

4. *Inservice training* — Professional competence should be maintained by suitable inservice training programs for all types of personnel.

5. *Retirement system*—An actuarially sound and comprehensive retirement system maturing at age 65-70 should be provided. It should make provision for

ordinary disability and disability occurring in line of duty. In general, it should provide for:

a. Permissive retirement after 20–25 years of service or at age 55
b. Compulsory retirement depending on ability to perform duties satisfactorily

Major Departmental Units

In order to carry out its many responsibilities and services, each state department of health has developed its own particular organization. Although the pattern of public health organization on the state level is more varied than that found locally, in general there are certain trends which are characteristic. In order to simplify administration, there is a growing tendency to reduce the number of departmental unit heads reporting directly to the health officer. The major units may vary in the several states, but there is a definite tendency to group similar services in three major units, designated here as bureaus:

a. Bureau of General Administration
b. Bureau of Local Health Services
c. Bureau of Environmental Sanitation

The remaining services may be in a single bureau of preventive health services or divided into three additional bureaus, such as:

d. Bureau of Preventive Health Services
e. Bureau of Special Health Services
f. Bureau of Institutions

The bureau chief is usually a deputy or assistant health officer. The bureau is comprised of several subunits, each of which is administered by a director who is a specialist in his particular field. In the large departments, the subunits may be further subdivided. The determination of the number of units and subunits is dependent largely upon the number of personnel, the budgetary provisions, and the scope of service rendered.

The specific services undertaken by a state department of health should be primarily determined by:

a. Established need for the services (including needs arising from special problems of the area)
b. Public recognition of the need and demand for the services

The creation of services thus recognized to be necessary and timely may require new or revised legislation, special or specific budgetary provision, and development of special interest and new kinds of competence among health department personnel.

State-Local Health Department Relationships

Since the local health department is dependent for leadership, guidance, and sometimes direction, upon the state health department, it is essential that the channels of communication both to and from the local health department and the state be clearly and well defined. Too often, local health departments may be the target of communications from many specific program directors of the state health department; each one of the directors emphasizing the importance of his particular program. Thereby, the local health officer may only judge the individual importance of the various programs proposed by the state by the relative eloquence and enthusiasm with which each state agent is able to advocate his particular program. This type of vertical organization often causes an unbalanced program in the local health department and leads to lack of coördination of the programs on both local and state levels.

Since the state director of local health services is most concerned with the promotion and development of local health programs, he has been appointed in many states as an assistant or deputy health officer in the state health department and has been assigned the responsibility of being the head of a major unit with direct access to the health officer.

Under the direction of the state health officer, the deputy responsible for local health services should coördinate the field program of the department and should establish lines of communications to and from the local health departments, either through his own central office or through a decentralized system of regional or district health officers who act as the representatives of the department in their respective jurisdictions. In this system of horizontal administration, the directors of the specific programs in the state health department act as technical advisers and are available upon the request of local health departments, such requests being channeled through the regional or district health officer to the deputy responsible for local health services. However, the deputy health officer responsible for local health services should not lose sight of the importance of promoting the various categorical programs among the several local health departments. The local health officers should meet at least annually with the state health officer and should participate in an advisory capacity in the formulation of over-all, state-wide policies and programs for health services.

Staff Organization

In developing the plans and programs of the department, the health officer utilizes the skills of his personnel. A policy committee, usually consisting of the health officer, deputy, and assistants in charge of major units and some of the subunit directors, should evaluate programs and plan policies and procedures. Such policy meetings should be presided over by the health officer and held at regular intervals, preferably monthly. In turn, the deputy and the assistant health officers who are in charge of major departmental units are held responsible for holding staff meetings of their respective subunit heads to obtain their participation in the formulation of plans and policies. In this manner all professional personnel are afforded an opportunity to participate in formulating the plans and policies developed to meet the services and responsibilities of the state health department.

Table of Organization

The work of a state health department is described in the subsequent statement. The terms "bureau," "division," and "section" are used in this statement with the full realization that such a terminology does not conform to the nomenclature found in all states. The terminology does follow that used in the federal government, and familiarity with a known usage is the major reason for its utilization here. The terms employed in this discussion are as follows:

a. "Bureau"—a major unit of the state health department
b. "Division"—a subunit within the "bureau"
c. "Section"—a subunit of the "division"

The terminology of units and subunits, as well as their relative importance and placement in the state health department, varies in actual practice among the several states.

1. Bureau of General Administration

Under the direction of the health officer, this bureau is charged with the over-all development of policies and plans, the review of programs, and liaison with federal, other state and local agencies, and voluntary groups. It is responsible for the preparation of plans, policies, and reports, and for numerous administrative services for the entire department.

Division of Administration

Usually under the direction of a deputy or assistant health officer, the division of administration is responsible for the preliminary preparation of plans, reports, budgets, and the supervision of

the three sections dealing with general administrative matters.

A. *Legal section*

Some states have separate sections dealing with:

1. Issuing licenses and permits
2. Preparing regulations or a sanitary code
3. Interpreting proposed legislation for the state legislature and local health departments

Under the direction of a lawyer, this section is responsible for keeping:

1. The manual of laws and regulations up-to-date
2. A continuous file on the regulations of local health departments

Often this function may be performed in the office of the health officer.

B. *Fiscal section*

This section conducts the fiscal operations of the department, such as:

1. Preparing formal budgets
2. Keeping accounts and fiscal records, including state appropriations, grants-in-aid received from the Federal Security Agency, through the Public Health Service and the Children's Bureau, and other moneys which may be received from foundations, individuals, or other sources

Assistance is also given to local health departments, sanatoria, and other institutions in the formation of budgets and reports in accordance with standards set up for state subsidy programs.

C. *Personnel section*

This section is responsible for:

1. Developing procurement procedures
2. Processing personnel requisitions and other documents
3. Maintaining liaison with state personnel and Civil Service agencies whenever these are outside the department of health
4. Supervising the department's personnel policy, including adequate plans for vacation, sick leave, and retirement
5. Keeping merit records on all employees

Division of Vital Statistics

In all but one state, the responsibility for keeping vital statistics is in the state health department. The division should be responsible for the registration of births, deaths, morbidity, marriage and divorce records, and for the analysis and interpretation of data obtained from such records. The division should also be prepared to develop statistical studies, either alone or with other divisions of the health department, designed to define in quantitative terms the nature of public health problems, and to develop means of evaluating the effectiveness of health department activities. It should also offer services to local health departments and occasionally to voluntary health agencies.

Division of Health Education

Most states are charged with the responsibility for health education activities and for collecting, organizing, and disseminating information pertaining to conditions which affect the public health. All personnel within the state health department participate in a health education program, and the division of health education itself is charged with the coördination of the various educational programs in the individual departmental units. Some health educators may be assigned to the district or regional offices, and preferably such programs should be channeled through local health departments. The health education program may be subdivided as follows:

a. Organizing communities to meet their health needs with available resources
b. Planning educational programs for the various service divisions of the state health department
c. Coöperating with other organizations to develop an integrated health education program which will complement and amplify the educational programs of the state health department
d. Assisting in the training of personnel
e. Preparing educational materials
f. Arousing public interest and informing the

public about health problems and activities in the health department, by means of the press, radio, motion pictures, and other methods

Division of Training

This is a relatively new unit which is being developed in an increasing number of state health departments to coördinate the training programs. As with the division of health education, the division of training acts to integrate and to advise in the actual training programs which are carried out by other units within the department. These training programs should be concerned with:

a. Orienting new personnel
b. Inservice training for all types of public health personnel
c. Developing field training for students in various phases of academic public health training

Many states offer fellowships consisting of tuition and stipends for the training of personnel in approved schools of public health, nursing, and similar postgraduate institutions.

A well organized training program can be an effective force in the recruitment of professional personnel. Some states offer approved residency training programs acceptable to the American Board of Preventive Medicine.

Division of Laboratories

Most states maintain a diagnostic laboratory for communicable diseases and a laboratory for the analysis of water and sewage samples. Some states have, in addition, laboratories for shellfish, milk, food and drug control, and industrial health. A few states operate laboratories for the production of biologicals and the collection and fractionation of blood, tissue diagnosis and other services, and research. Ideally, all these laboratories should be housed jointly and should be under the direction of a director of laboratories.

The volume of services performed will be dependent upon the availability of other laboratories in the area and the extent to which the medical, dental, and allied professions turn to the state for these services.

Depending on the scope and nature of the laboratory services which are offered, the division of laboratories may be placed, as here, within the bureau of administration or, under other circumstances, it may be included within the bureau of preventive health services or the bureau of institutions.

In geographically large states there may be branch laboratories of the state, or the state may develop coöperative agreements with hospitals or local health departments for the performance of certain services. Many states conduct approval programs of laboratories in local health departments and hospitals. In the past, many of these approvals have been only for the performance of diagnostic serological tests for syphilis. However, the trend is to develop approval programs for all diagnostic procedures for communicable diseases as well as for the analysis of food, milk, water and sewage samples, and research.

Division of Registration

In some of the states, the registration of physicians, dentists, nurses, and other practitioners of the healing arts, as well as beauticians, barbers, and other similar groups, may be in whole or in part the responsibility of the state health department.

Community Disaster Services

Usually the state health officer and his staff have been assigned the responsibility for developing plans on a statewide basis to prepare the medical and health plans for handling community and regional disaster. In most states the state health officer is also the head of the medical and health services and special weapons defense division of the state civil defense agency. As such he

is charged with the responsibility for developing plans to handle:

a. Casualties and medical care for displaced populations
b. The defense against special weapons, atomic bombs, biological, radiological, and chemical warfare

This unit also has the responsibility to prepare the state to meet the health needs not only of wartime disaster, but of disasters due to acts of God.

II. *Bureau of Local Health Services*

The bureau of local health services is primarily responsible for the liaison between the state health department and local health departments. It is responsible for coördinating the programs of the various bureaus, divisions, and sections of the state health department concerned with local health and for channeling these services through the bureau of local health service to the local health departments.

The bureau is responsible for the development of a state financial assistance program for local health departments, based upon a formula utilizing the factors of population, financial need, and public health problems. Thus, state funds, matched by local appropriations, should be disbursed to local health departments in accordance with an established plan. This bureau also determines the standards of operation and personnel and reviews the budgets and plans of local health departments. It is responsible for the promotion, establishment, maintenance, and extension of local health departments.

District and Regional Offices

Some of the largest states are divided into districts or regions, each staffed by a district or regional health officer and other personnel, such as public health engineers, nurses, sanitarians, health educators, social workers, physical therapists, nutritionists, clerks, and others. These state districts are normally an administrative part of the bureau of local health services which provides them with administrative supervision, and coördinates and, to some extent, directs the relationships of the staff with local health departments. The district or regional staffs are consultants to local health departments. If these consultants require assistance from specialists, these specialists are made available from the divisions in the central department.

In those states where local health departments do not adequately provide minimum services, some services which would normally be provided by local health departments are supplied by the state district health offices within the personnel limitations. Because of the large population or geographical area that must usually be covered by the districts, their direct services are necessarily skeletal in nature and only the services most essential for the public health are rendered.

In addition, service divisions such as public health nursing and social work may be under the bureau of local health services. In some states, they may be part of the bureau of general administration or the bureau of preventive health services.

The state should not attempt to build up large service units of public health nurses and social workers. On the other hand, the state should encourage local health departments to employ these persons in such numbers as may be necessary to meet local needs. In every instance these service divisions, on the state level, can offer much in the development of plans and policies for health programs, and they should be given regular opportunities to participate through staff conferences in the policy development of the department.

Division of Public Health Nursing

The unit on public health nursing should be included in the policy planning programs of the department. This

division's duties involve not only the supervision of public health nurses employed by the state health department, but also may include guidance, advice, and sometimes supervision of public health nurses employed by local health departments. These responsibilities on occasions may extend to voluntary nursing associations.

Public health nurses are one of the largest groups of personnel employed by local health departments, but are not nearly as large, relatively, in a state health department. If local health departments have adequate staffs of public health nurses, there should be little, if any, need for nurses in the state health department to render direct services. Therefore, only sufficient numbers of nurses need be employed by the state as are necessary to give adequate advice, consultation, and supervision to district and local personnel. Most public health nurses render a generalized program, but there are, in most states, specialists who act as consultants. In addition, many states assign nurses to certain divisions with specific programs, such as venereal disease and tuberculosis.

Nurses employed in institutions are usually not integrated and not responsible to the public health nursing division. However, efforts should be made to develop methods for coördinating the work of these two groups.

This division participates in research, and in the development of inservice, field, and intramural training programs for nursing personnel.

Division of Public Health Social Work

The trend to employ more medical social workers in public health has been apparent over the last decade. As with the public health nurses, the public health social workers should usually carry on generalized programs. Therefore, only such numbers of social workers should be employed by the state as may be necessary to give assistance to local personnel. In many states, particularly those where crippled children services and other specific medical care programs are operated by the state, the state social workers have been providing more direct services. In states where the health department is responsible for the operation of institutions, certain social workers may be assigned specifically to such institutions. In addition, full-time social workers may be placed in cancer, venereal disease, or other programs.

III. *Bureau of Environmental Sanitation*

Under the direction of a sanitary engineer, who may be a deputy, are grouped all the services in environmental sanitation.

Division of Sanitary Engineering

Concerned with the approval of treatment works of public water supplies and public sewage disposal systems, this division is also responsible for controlling pollution, supervising shellfish areas in coastal states, abating noisome trades, and giving consultative advice to community and other state agencies, not only in the field noted above, but also in refuse and garbage collection and disposal, dumps, operation of overnight and recreational camps, rodent and insect control, hygiene of housing, and accident prevention.

In some states, supervision of private water supplies and private sewage disposal facilities may be the concern of the state health department, but usually these are left to the jurisdiction of local health departments. Most state divisions of sanitary engineering give consultation to industries and municipalities relative to the proper disposal of industrial and domestic wastes.

Division of Food and Drugs (Including Milk)

The supervision of food and milk sanitation should be the responsibility

of the state health department, but in some states it is assigned to other departments. Such supervision is usually the dual responsibility of local and state health departments. The division is concerned with health, safety, quantity, quality, and consumer value of foods, milk, drugs, and cosmetics. Possessing police authority, inspectors are authorized to enter premises, collect samples, initiate complaints in court, and, when necessary, to seize and destroy food unfit for human consumption. The education of food handlers and other educational programs is increasing.

Division of Occupational Health

This division is in the health department in all but a few states, in which it is in the department of labor. This division may be placed either in the bureau of environmental sanitation or the bureau of preventive health services.

Concerned with improving the health of workers and other persons exposed to industrial hazards, modern occupational health utilizes the professional skills of physicians, engineers, nurses, chemists, health educators, and biostatisticians. Reducing the incidence of occupational diseases and industrial accidents, the division is concerned with the abatement of industrial hazards through inspections and consultations with both management and labor, as well as with the local health departments. This division, when in the health department, must coöperate with the department of labor. This division conducts research programs and offers specialized laboratory services.

IV. *Bureau of Preventive Health Services*

Division of Communicable Disease Control (Including Acute Communicable Diseases, Venereal Disease, Tuberculosis, and Animal Diseases Transmissible to Man)

Large states have separate divisions for communicable diseases, venereal diseases, and tuberculosis. Smaller states may combine these and may have also, in combination, the services for chronic diseases. With the diminishing morbidity of communicable diseases and venereal diseases, including tuberculosis, there is a trend to combine these services within a single division.

A. *Acute communicable diseases*

The communicable disease responsibilities of the state are:

1. Collecting reported data from local health departments
2. Publishing reports on the incidence and prevalence of disease
3. Conducting or assisting in epidemiological investigations
4. Promoting immunization programs and other methods for the prevention of communicable diseases
5. Developing regulations for isolation and quarantine
6. Disseminating knowledge relative to the prevention and treatment of contagion during outbreaks
7. Assisting in applied research relative to the spread, prevention, and other epidemiological behavior of communicable diseases

All states provide laboratory facilities for the diagnosis of these diseases.

B. *Tuberculosis*

The case finding, diagnostic, and treatment program for tuberculosis is a joint responsibility of the local and state health departments. In some states the tuberculosis sanatoria may be operated by separate agencies.

Most states conduct special programs for tuberculosis case finding activities, such as conducting mass x-ray surveys, investigating contacts of cases, and studying population groups in which experience has revealed tuberculosis is most likely to be found.

In some states the tuberculosis responsibilities and services are combined within the same division which administers the sanatoria. The tuberculosis

care and sanatoria management may be the joint responsibility of the state and county rather than the state health department.

C. *Venereal diseases*

The case finding, diagnostic, and treatment program for venereal diseases is a joint responsibility of the local and state health departments.

Usually, diagnostic facilities and drugs are available. Some states operate diagnostic clinics directly, while others conduct such clinics in coöperation with local health departments or general hospitals.

D. *Animal diseases transmissible to man*

There are more than 80 animal diseases transmissible to man. For many of these, such as brucellosis, leptospirosis, rabies, and Q fever eradication or control of the disease in animals is the only means of eliminating human infection.

The veterinarian is a technical adviser and consultant to the public health administrator on preventive medicine, food hygiene, legislation, and health education as they relate to animal diseases transmissible to man.

The programs involved require the full use of the methods of epidemiology, health education, and applied research, just as do other types of disease control. Particularly important in this field is the liaison with other departments, such as agriculture, and with the veterinary profession.

Division of Maternal and Child Health and Crippled Children

All state health departments are responsible for the administration of maternal and child health programs. In most states health departments also operate crippled children services. In the remaining states the trend is for the crippled children program to be transferred to the health department. Since the programs for the care of crippled children are a specialized type of service, some states may include a specific division for crippled children within the bureau of special health services which concerns itself primarily with specialized care and treatment programs.

In general, maternal and child health programs pay special attention to services for the mother during the antepartum, partum, and postpartum periods, and for the child during infancy, preschool age, and school age.

Coördinating its work with the department of education, this division is also responsible for the promotion and/or supervision of the school health programs conducted by either local health departments or local school systems, including an educational program and a medical program designed to reveal the disabilities, such as defective hearing and vision in children, so that a follow-up for the necessary corrections of the revealed disabilities may be made.

Consultants are available to hospitals, day care centers, private and parochial schools, physicians, and other interested groups on special problems of children. Many states have developed special facilities for the transportation and hospitalization of premature infants. The programs for handicapped children vary in different states. They are tending to emphasize the common features of handicapping conditions, and consequently to become more inclusive of diagnostic groups. In a few states special programs for congenital heart diseases, cerebral palsy, and epilepsy have been initiated.

Division of Dental Health

Promotional in nature, dental activities frequently include an educational program and preventive and corrective programs for preschool and school children, either in clinics or from the family dentist.

Increasing attention is being given to

providing postgraduate education in children's dentistry to dentists in private practice. Usually dental clinics for children are the responsibility of either the local health department or charitable agencies and, in general, state health departments do not provide clinic services. Limited diagnostic laboratory facilities and preventive treatment programs may be provided by the state. Most states are now in the process of recommending:

a. The fluoridation of public water supplies for the prevention of dental decay, or
b. The topical application of fluorides to chi'dren's teeth where fluoridation of the public water supply is not practised.

Division of Mental Health

Mental health as a public health function should be incorporated within the state health department activities. In some of the large states, mental health programs are administered by a separate department which concerns itself also with the institutional care of patients. In most states the health department is responsible for the preventive aspects of a mental health program and the promotion of mental health services in local health departments. Child and adult psychiatric clinics and staff and public educational programs are some of community mental health services offered.

While many of these programs are offered directly by the state organization, in some states they are conducted on a coöperative basis with the larger local health departments or generul hospitals in metropolitan areas.

V. *Bureau of Special Health Services*

The bureau of special health services is responsible for administering those programs involving specific types of health services which are not ordinarily offered by local health units, because of their lack of required technical personnel.

Thus, these specialized services have been included within the bureau of special health services, while those services primarily designed to assist local health units have been placed within the bureau of preventive health services and the bureau of local health services.

Division of Nutrition

Adequate nutrition programs may include: periodic surveys of foods consumed and of the incidence of malnutrition; educating the general population and special groups; promoting clinical services; promoting legislation and other means of securing enrichment of critical foods. Particular emphasis will usually be placed on consultation to the public health nurses, school health programs, teacher-training institutions and to professional training institutions. Special laboratory services are often required.

It is important for the nutrition service to be placed administratively where it can be most available to all program directors within the department.

Division of Chronic Disease

Cancer and heart disease programs are a relatively new and growing interest of health departments. In some states diagnostic cancer clinics or cancer detection clinics have been operated for many years. Statistical studies and research, as well as diagnostic cancer services, are offered by most of the larger states. Many of the clinics for cancer and heart disease are coöperative clinics in which the state assists local general hospitals in expanding and improving their existing diagnostic and case finding programs. In a few states programs designed to meet the problem of the aging population have been developed. Programs for multiple screening and for arthritis, diabetes, and other chronic illnesses, are becoming more numerous. However, in the main, these are as yet in the process of develop-

ment, evaluation, and demonstration.

If chronic disease hospitals are operated by the state health department, they would not be included within the division of chronic diseases, but would be placed under the bureau of institutions.

Division of Alcoholism (Including Drug Addiction)

A few states have pioneered in the field of chronic alcoholism by initiating educational and research programs in addition to clinics for selected cases that may be admitted for rehabilitation.

It is expected that the increased interest in drug addiction will stimulate new programs for the management of drug addicts, including further research and strengthened narcotic control. In a few states the health department may be charged with the development of a hospitalization program for narcotic addicts. In others the department of mental health may have this responsibility. The program for drug addiction may be placed in a separate unit.

Division of Medical Care

A few states are presently operating a general medical care program for indigents or medical indigents. Some state health departments act as consultants to the department of welfare for the provision of medical care. Some are responsible for general supervision of hospital prepayment programs, including the approval of contracts made between the prepayment insurance groups and participating member hospitals. Every state health department operates special medical care programs, such as, diagnostic treatment, and follow-up clinics for venereal diseases and tuberculosis. More recently, a few states have developed programs for cancer, heart disease, chronic disease, and multiple screening clinics. Most of these programs are operated from the special categorical divisions and are not integrated by a separate division on medical care.

VI. *Bureau of Institutions*

If the state health department operates state hospitals and sanatoria, a large proportion of the departmental appropriations may be extended for the operation of these facilities. As the speciality of hospital administration has developed, it has become desirable to place the responsibility for the operation of health facilities within a specific bureau of the state health department. The primary concern of this departmental unit in the operation of these state facilities would be the business management of the institutions, although the bureau would coöperate with other subdivisions of the department which operate programs closely concerned with the care of patients. The state health department, through this bureau, may also supervise the programs for:

a. Licensing public and private hospitals, clinics, convalescent and nursing homes, and boarding homes for the aged within the state
b. Aiding in the construction and improvement of local health centers and hospitals both by financial assistance and expert consultative advice

Division of State Hospitals and Sanatoria

In some states the health department is assigned the responsibility for the administration of tuberculosis and other types of hospitals and sanatoria. In a few states the health department also operates cancer hospitals, chronic disease hospitals, and hospitals for crippled children. Mental hospitals may also be administered by the state health department. There is a trend to place within a single department all types of institutions which are concerned with health services. All institutions in a few states are operated by a separate commission on institutions, or by other departments of the state government. But the re-

sponsibility for the administration of those state hospitals and sanatoria which are in the state health department would lie with this division.

Division of Hospital Licensing

Most state health departments are now licensing hospitals. Many are licensing clinics, convalescent and nursing homes, and boarding homes for the aged. Periodic inspections determine compliance with regulations made by the state. Consultations are offered to hospitals in all fields of hospital administration, such as construction and conduct of maternity units and hospital care of premature infants. Most state health departments are also responsible for the administration of the temporary Hospital Survey and Construction Program as provided by the Hill-Burton Act. In smaller states the functions of hospital licensing and the administration of the Hill-Burton program may be combined within the same unit which is responsible for the operation of the departmental institutions.

CONCLUSION

The pattern of development of the health department in each state must conform to the needs and resources of that state. Therefore, a uniform departmental organization among the various states is not to be anticipated, and, indeed, is not desirable. The plan of organization of a state health department as presented in this statement is only a suggested guide, although it does indicate those services and responsibilities which may be incorporated into efficiently organized and adequately staffed state health departments.

The development of programs within the field of public health is not a static process; it is indeed dynamic. Changes of necessity will, therefore, occur in the services and responsibilities of a state health department. But this statement does indicate a structure which is sufficiently flexible in its organization so that these services and responsibilities may be undertaken by those state health departments having the inclination, opportunity, and interest.

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THE CLEVELAND PROGRAM

IF one walks through a trail in the woods, every tree, every cushion of moss, every shaft of sunlight makes its impress on the mind. In an automobile or a train, one sees much less. In an airplane nothing may be visible but a sea of clouds.

So it is with life. If we are moving very fast—as we are moving in the expanding areas of public health—it is hard to realize how far we have come or what is the real significance of our progress. The great value of the Annual Meeting of the APHA is that it gives us a chance to pause, to survey the current scene, to comprehend what has been actually accomplished and to plot our course for the future.

Such a vision was revealed at the Cleveland meetings; and it was a most inspiring one.

The public health worker of today is still faced with serious problems of communicable disease control; and the Cleveland meeting was unusually rich in contributions to basic problems of epidemiology. Significant additions were made to our knowledge of anthrax and rabies in cattle and human beings, of histoplasmosis, of encephalomyelitis, leptospirosis, epidemic and murine typhus, hepatitis, enteric and treponemal diseases. A paper of unusual significance presented suggestive data on the prevention of paralytic poliomyelitis by the use of gamma globulin.

The microbiologist was in the picture, with reports on the work of numerous virus laboratories, papers on the laboratory control of water supplies and dairy products and a discussion of the relationships of state laboratories to hospital and private laboratories.

The engineers looked backwards in a review of a Century of Progress in Public Health Engineering and forward to such broad problems of the future as Water Conservation and City Planning and Housing. The sanitation and processing of foods and the results of fluoridation of water supplies, and the interpretations of the values of this process to the community, received due attention.

In other sessions the expansion of Industrial Hygiene in such fields as those of exposure to radioactive substances and sound control were considered.

In the medical and nursing fields, the problems of maternal and fetal mortality received special attention and solid basic data were presented on the evaluation of the Maternal and Child Health program. The technic of effective coöperation between the nutritionist and the nurse was discussed; and a most fruitful symposium presented various specific methods of group teaching, in which the doctor, the nurse, and the health educator all have their roles to play. The more general problems of evolving technics of community health education were analyzed in another Section.

The programs arranged by the School Health Section were particularly extensive and of notably high quality. The relation of classroom teaching to the school health program, the dental and nutritional problems of the school child, the mental aspects of dental health were among the topics discussed; and no less than nine reports were made by special study committees of this Section.

In the field of health administration, the problem of health surveys was considered, with analysis of the respective values of professional surveys and of community self-surveys. Community planning for local health services was discussed in another symposium and the role of the health council in such planning emphasized.

Perhaps the most outstanding feature of the Cleveland program was the emergence of new fields of science related to the constitutional disorders, particularly those common in the later years of life. The audience of an APHA meeting half a century ago would have expected discussions of epidemiology and sanitation; but would have been surprised to hear about epilepsy and cardiac disease, the rehabilitation of the hard-of-hearing, about "Crippled Children in a Crippled World," about multiple sclerosis and cancer, about obesity, "America's No. 1 Health Problem."

Naturally, this emphasis on the chronic diseases led to discussion of community provisions for medical care so essential to their control. Home care programs were reported from Massachusetts, Virginia, New York, and the District of Columbia. Studies of hospital facilities and their adequacy and of industrial medical programs in relation to the community as a whole came in for consideration.

The Medical Care Section conducted a series of admirable discussions in its vital area of public health; and one is impressed by the fact that while politicians continue to argue about "socialized medicine" the group of serious students in our Medical Care Section are quietly accumulating the basis of sound factual knowledge which will ultimately make possible the solution of their problems. A particularly helpful symposium was devoted to the general practitioner's role in the organized health program, a vital topic which we shall consider in a succeeding editorial.

All in all, the program at Cleveland gave us an inspiring vision of a field which is broadening its scope and deepening its intensity with breath-taking speed. From the virus of influenza to the global problems of the World Health Organization, the whole picture was spread before us, giving us the inspiration for redoubled efforts in the year to come.

THE HEALTH OFFICER AND THE FAMILY DOCTOR

THE program of the Cleveland meetings illustrates the fact that the modern public health campaign is still concerned with health menaces associated with the physical and biological environment of man; and with those threats which are inherent in his social environment, associated with the problems of poverty. This program, however, also makes clear that many of the emergent challenges of modern public health are related not to any of these environments but to the individual human being. Crippled children, epileptics, cancer cases and cardiac cases, the hard-of-hearing and the vast numbers of persons, consciously or unconsciously handicapped by emotional maladjustments—these are not primarily problems for the engineer or the microbiologist or the social worker, they are problems in the solution of which the physician must play a major role. They are intimately concerned with the individual. They involve the detection of deviations from the ideal norm of health and well-being—physiological and psychological; the treatment of such deviations; and the inculcation of those habits of personal hygiene which will tend to fullness of living.

Since these are our objectives, it is clear that the private practitioner of medicine, and particularly, the family doctor, is the central figure in this part of our program. It is his task to diagnose incipient disease as early as possible, to treat it as effectively as possible, and to make vital educational contact between our great body of health knowledge and the individual who must apply that knowledge in his daily life.

The quality of medical practice in the country is therefore an increasingly vital element in determining the success of our public health programs. In the United States we have been astonishingly fortunate in the progress in medical research and the phenomenal improvement in medical education which have taken place during the past half century. Where scientific skill is combined with the instinctive gift of almost miraculous divination which characterizes the great clinician—we have one of the most inspiring examples of fruitful service which can be conceived; many of us have known doctors of this kind; and the writer of these words has been fortunate in living for many years under the guidance of such a one.

The private practitioner is then a central figure in our public health program. It is important for the advance of this program that both the practitioner and the health officer should be aware of their mutual responsibilities. The practitioner must recognize the central place of the health officer as the designated representative of broad public interest in public health and in many medical affairs; and must realize his own opportunities for furthering the progress of public as well as individual health.

On the other hand, the health officer has his corresponding obligations to the private practitioner whom he is in position to assist in many concrete ways. In connection with diagnosis the health department provides invaluable assistance through its laboratory services, now widened to include tests for physiological abnormalities as well as microbic factors in disease; by Wassermann tests and tuberculin tests, by x-rays and multiphasic screening; and by provision of specialized advisory clinic services in such fields as child health and particularly mental health. In the early stages of a program, the health department experts open up new pathways of service; at a later stage, the task may be more or less completely handed back to the practitioner. In some areas the pediatrician in his private practice is taking over many of the functions of the child health conference and

the simplification of the treatment of syphilis is turning that treatment back from the specialist to the general practitioner.

In providing he family doctor with the treatment facilities he needs, the role of the health department is also a considerable and an increasing one. The communicable disease hospital is a vestige of the past as a separate institution; but tuberculosis sanatoria are still frequently operated by the health department. The Hill-Burton Act has placed the state health department in a central position as an agency for hospital regional planning, and the program has developed with notable success. In certain cases the construction and operation of general hospitals has been assigned to the state health department, as recently in Georgia; Massachusetts has charged the State Health Department with the construction of a hospital for chronic diseases discussed in a succeeding editorial. Such enterprises are invaluable to the family doctor in the performance of his difficult tasks. In aiding the physician to fulfil his function, that of health educator—the health officer has made less obvious progress, although the opportunity is great. The health department, if it is a live one, has a broad concept of the need for transmitting certain types of information to the community and motivating the actual application of that knowledge. The family doctor in contact with the actual needs and the actual ignorances of the individual has a unique opportunity for realizing these aims.

It might be of great value if—in addition to his official contacts with the public health committee of the local medical society—the health officer could consult with a special carefully selected physician's committee on health education, with which he and his health educator could confer and work out a joint program of health education for a given community in a given year and a joint plan for channeling the results of this deliberation through the family doctor in the field to the ultimate consumer.

All this, of course, assumes the existence of such a person as the "family doctor," a person in continuing intimate contact with his patients, sick or well, acting always as a health adviser and making health examinations, not as a routine every year on a birthday, but at intelligently chosen intervals in early years and with reasonable frequency in the later decades of life; and, at all ages, when the human machine appears to work with discomfort or inefficiency. Medical care in acute illness is, of course, potentially available to most persons in the United States; but it can hardly be contended that preventive, educational health supervision is now generally enjoyed by families in low or moderate income brackets in the absence of ill health. It is not the task of the health officer to dictate an answer to this question. It is a vital challenge to the medical profession itself to seek, with the coöperation of competent economic experts, ways in which the ideal of "a family doctor for every family" may be wisely approached, while retaining the high standards of quality and the complete freedom of the patient-doctor relationship which are essential to the successful practice of the healing art.

THE STATE CHRONIC DISEASE HOSPITAL IN BOSTON

SINCE the inception of its state-wide cancer control program in 1927, the State of Massachusetts has been actively interested in the problems of chronic disease. It is estimated that there are 70,000 persons suffering from various forms

of chronic disease in the state, of whom one-half are below the age of 45 and one-sixth below the age of 25. After much preliminary planning, the sum of 11 million dollars (later increased to 13 million) was authorized in 1949 for a 600-bed State Chronic Disease Hospital to be constructed and operated by the State Department of Public Health. A site was chosen in Franklin Park (Boston) and construction was begun last April.

The institution will have one story below ground and 12 stories above ground and will include some million cubic feet; while general service facilities will be adequate for increasing the ward capacity from 600 beds to 800 later on. There will be 10 operating rooms and provision for televising operations. Intercommunication systems and pneumatic tube services have been planned which should materially reduce operating costs. Meals will be delivered to the wards in electrically heated conveyances. A quarter of the beds will be piped for oxygen and suction, with a third pipe for some purpose which may be needed in the future. There will be special departments for dentistry and eye, ear, nose, and throat diseases. Extensive laboratories will be included for various forms of chemical, biological, parasitological, and radiological research. Physiotherapy and occupational therapy are amply provided for, with libraries and recreation rooms and mental hygiene and social service counseling.

The institution will not be used for custodial care, domiciliary care or terminal care. Patients will be accepted for remedial measures and rehabilitation from physicians, hospitals and other medical institutions and referred back to the source of referral or to the outpatient department of the hospital itself.

Dr. W. H. H. Turville, Superintendent of the new hospital, outlines the functions of the institution as follows:

1. It will provide such specialized facilities for the diagnosis and treatment of those chronic disease patients in Massachusetts who can potentially benefit from such hospitalization. Thus, the types of cases to be cared for will be all cases of chronic illnesses which can be helped by medical or surgical treatment and are capable of rehabilitation.
2. The hospital will serve as an active center for research in chronic diseases as to cause, prevention and cure.
3. It will serve as a center of training in chronic illnesses; i.e., a teaching hospital affiliated with the three medical schools in Boston, the Harvard School of Public Health, a teaching hospital for resident physicians (postgraduate training), a school for attendant nurses and also it will be affiliated, for teaching purposes, with schools of physical therapy, occupational therapy, and social service.
4. The hospital will serve as a large outpatient clinic for patients with chronic diseases. We believe the outpatient department to be a very vital element of the program. It will prevent the hospitalization of some cases and it will provide for a more rapid turnover of the bed patients if there is an assurance that the patients can return for regular outpatient therapy. The outpatient department will also aid in a more complete research in chronic diseases.
5. The hospital will provide a complete rehabilitation service for the disabled and chronically ill, including research in improved methods of rehabilitation and professional training of doctors, nurses, physiotherapists and other professional personnel in this field. This rehabilitation will include not only physical therapy and occupational therapy, but also psycho-social adjustment and vocational training and guidance.

An institution so wisely planned and so generously financed should exert an inspiring influence on the development of the movement for the care of the chronically ill throughout the United States.

LETTER TO THE EDITOR

TO THE EDITOR:

I have read with interest the leading article in the August issue of the *American Journal of Public Health*, in which Dr. Robert T. Legge * reviewed the progress of industrial medicine in the past fifty years. I realize that the treatment of the subject was necessarily sketchy, but I regretted that several important early publications were not mentioned. I have in mind the following:

Sir Oliver Thomas. Diseases of Occupation, from the Legislative, Social and Medical Points of View. London: Methuen and Co., 1908, pp. 427. New Library of Medicine.

Dr. W. Gilman Thompson (of New York). The Occupational Diseases—Their Causation, Symptoms, Treatment and Prevention. New York and London: D. Appleton and Co., 1914.

I should also like to direct Dr. Legge's attention to a chart which I prepared in 1916 on the basis of Dr. Thompson's book. This chart, issued under the auspices of the Division of Industrial Hygiene, Department of Health, City of New York, in 1916, was entitled "Industrial Poisons and Irritants Originating in Dusty Trades." It was arranged by industries and by symptoms as they affected various anatomic systems. The chart was distributed to every outpatient clinic in New York City. It can be found in the annual report of the Association of Outpatient Clinics of New York City for 1916.

I thought Dr. Legge would like to know of these items and that you might publish a note about them for the information of present-day workers in the field of industrial medicine.

E. H. L. CORWIN, M.D.,
Executive Secretary,
The New York Academy of Medicine,
New York, N. Y.

August 26, 1952.

* Legge, Robert T., M.D. Progress of American Industrial Medicine in the First Half of the Twentieth Century. *A.J.P.H.* 42, 8:905–912 (Aug.), 1952.

Clearing House on Public Health Salary Information and Personnel Needs

RESEARCH IN NURSING EDUCATION

A double-barreled research attack on the problem of the nursing shortage is being undertaken by the Division of Nursing Education of Teachers College, Columbia University. Through two separate grants, one of $110,000 from an anonymous donor and one of $100,000 from the Rockefeller Foundation, two separate projects have been set up or planned.

The first is a five-year Cooperative Project for Junior College Nursing Education. Junior colleges are assisted in establishing programs for teaching the registered nurse functions in two years instead of the usual three. The elimination of the more laborious and repetitive aspects of training is expected to step up nursing recruitment. The project, in addition to furnishing consultation service, is carrying on research to test the quality of the new program and develop patterns for nursing education in junior colleges. Mildred L. Montag, assistant professor of nursing education, is the project coördinator and serves as chief consultant to the faculties of cooperating colleges. A 16-member advisory committee of nurse training educators, junior college presidents, hospital administrators, board members of nursing schools serves as an advisory committee. The first pilot project is being carried on in the Orange County Community College, Middletown, N. Y.

This project is one of the activities to be administered by "a center for the administration of a program of research, experimentation, and field service" established through the Rockefeller grant. Beginning last month, the center, over a five-year-period, will study major problems in nursing and nursing education in the United States, based on five main activities.

1. Conduct studies and experiments to determine the functions of nursing and the best use of nursing personnel and, where necessary, redesign the form and content of courses for inservice, practical, technical, basic professional, and graduate nursing education.
2. Provide consultant service to selected nursing schools and agencies whose programs may exert wide influence for the advancement of nursing.
3. Organize field studies on problems of individual nursing schools and agencies and help them find solutions and evaluate results.
4. Distribute research findings and field experience information that may improve nursing education and service.
5. Contribute to the training of a selected group of future leaders in nursing research and education.

Immediate attention is being given to the critical need for improving and increasing nursing service in the country. The center will work closely with professional organizations, particularly the new National League for Nursing. The center is administered by Helen L. Bunge, executive officer, under the supervision of R. Louise McManus, Ph.D., director of the Teachers' College Division of Nursing.

OHIO PROJECTS IN NURSE RECRUITMENT

Getting new recruits into the nursing profession and getting more nursing from the existing pool of trained nurses are the aims of two special projects centering in Ohio. The University Hospitals of Cleveland have initiated a plan whereby students at the Frances Payne Bolton School of Nursing of Western Reserve University receive free tuition and maintenance for a 32-month basic program. The subsidy, covering

$800 tuition and maintenance, will be cancelled if the student carries out the agreement to work in the hospitals for a year following graduation. If the agreement is not fulfilled, the subsidy becomes, in effect, a loan to be repaid by the student.

A similar joint plan of the School and University Hospitals is in effect, enabling graduate nurses to continue their nursing education. Six months' continuous employment in the University Hospitals makes a nurse eligible for free tuition for one three-hour course in the School of Nursing; two years' service, for one full semester program of 15 hours; three years' service for two full semester programs.

The other Ohio project is a two-year study, by the Ohio State Nurses Association, of "The Position, Function, and Job-Satisfaction of Nurses in a Modern Hospital." The Association, recognizing the limited supply of professional nurses, believes that nursing care may be improved if the inherent satisfaction in nursing as a career is increased and the available number used most efficiently. Among the questions being considered is, "Why do so many graduates of nursing schools leave the field of nursing?" In Ohio there are 17,500 nurses on the job, 8,000 inactive. Robert P. Bullock, Ph.D. of the Department of Sociology, Ohio State University, is directing the study through a participant-observation and interview study of nursing duties and organization in Grant Hospital, Columbus. Other hospitals will later be included in the study.

RECRUITING NURSES WITHOUT CARS

In Virginia, coöperation between two state departments now makes it possible to provide cars for newly recruited public health nurses who might not have taken the jobs if they had had to buy cars immediately. The State Health Department has an arrangement with the State Highway Department whereby state cars are assigned to new employees for official duty for six months. The highway department is reimbursed by the health department on the basis of four cents a mile. Thus, lack of a car need not delay employment of a nurse.

EXPOSING STUDENTS TO PUBLIC HEALTH

For the fourth consecutive year the U. S. Public Health Service during the past summer employed a group of professional and graduate school students as assistants in various projects—public health, clinical, and research. A total of 68 students—49 medical, 6 engineering, 5 veterinarian, and 8 graduate science—from 13 states and the District of Columbia were recruited through professional schools. The purpose of this program is to give the students a sound understanding of the field of public health, of the opportunities it offers to their particular profession, and of the operation of federal, state, and local agencies. A number of the students have indicated an interest in entering public health work.

Medical students were in the majority assigned to local health departments. They assisted in such activities as epidemiological studies in psittacosis, poliomyelitis, encephalitis, dysentery to clinical clerkships in hospitals for psychotics and drug addicts, research in heart disease and mental health, research in venereal disease programs, among others. Veterinary students studied rabies in wildlife and were assigned to epidemiological work in various diseases of man related to animals. Engineers studied sewage and waste disposal, water supply, industrial hazards, hookworm control, and made a statistical analysis of the APHA inspection technic in housing sanitation.

TRAINING PROGRAMS SUMMARIZED

"Training Personnel for Public Health Programs" is the final chapter of a recent Public Health Service publica-

tion, *Report of State Health Programs for Five-Year Period, 1946–1950*. Detailed figures as to trainees on full-time schedules are given for each of the five years together with the number planned for 1951.

Nearly 21,000 persons have had their training sponsored, with greater or lesser degree of financial assistance, by state health departments, and an additional 7,200 planned for 1951. Of the total in the five years, nearly 40 per cent received accredited training, defined as training for which a university gives credit toward a degree. In the five years the number of trainees more than quadrupled—fewer than 1,600 in 1946, more than 7,000 in 1950. As to the type of workers trained, the largest number were nurses, 45 per cent of the total. This group also had the largest proportion of accredited training, just 50 per cent. Physicians were a little more than one-fifth of the total trainees and fewer than one-fourth of their number received accredited training. With each succeeding year the percentage of persons receiving accredited training decreased. In 1947 two-thirds of the training was accredited; in 1950 and projected for 1951, less than 30 per cent.

The health field in which training was given is summarized for 1949 and 1950 and for the projected 1951 trainees. General health led the field with about 40 per cent, mental health and maternal and child health followed each with nearly 20 per cent.

The same report has a table showing that 10 per cent of planned positions for 1950 in state health departments were unfilled as of January 1, nearly one-third of 189 dentist positions, 27 per cent of 1,000 physician jobs, nearly one-fourth of 265 health educator jobs. About 8 per cent each of laboratory, sanitarian, and nurse positions were unfilled.

PHYSICIANS, DENTISTS, AND LAWYERS

Incomes of physicians, lawyers, and dentists for the three years, 1949–1951, are reviewed in *Survey of Current Business* for July, 1952. Physicians were in the most favorable position among the three groups both for total net income and percentage increase over the three years. In all three groups average incomes were substantially higher than median, reflecting the skewing effect of a few very high incomes. As to the salaried and nonsalaried, physicians and lawyers show opposite trends; among the former, nonsalaried incomes are substantially higher than salaried; among the latter, salaried incomes take the lead.

This report has been reprinted and is being distributed by the American Medical Association through its Bureau of Medical Economic Research as Miscellaneous Publication M-68. 535 N. Dearborn St., Chicago. Presumably free.

PUBLIC HEALTH IS ALL OF A PIECE

The Iowa Division of the American Cancer Society, in the 4th year of a program, has granted 3-year nurse training scholarships to 50 young women from 43 Iowa counties. The awards grant tuition, fees, books, and uniforms for 3 years of nurse training, beginning this fall, at any Iowa accredited nurse training school. Candidates, who receive a maximum of $500 in scholarship aid, must agree to complete their training and to practise in Iowa for two years immediately following graduation.

The Iowa division is the first in the country to set up such a program, under which 131 trainees are attending 23 nursing schools in Iowa. The scholarships, aimed at relieving the critical nurse shortage in the state, are part of a long-range program to expand the cancer case finding and home service programs of the Society's 102 Iowa chapters.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

A HALF MILLION NURSES

The American Nurses Association has just published its 1951 *Inventory of Professional Registered Nurses,* the second to be made. The first such inventory was made in 1949 at the request of the National Security Resources Board. A third is planned in 1956.

In 1951 over a half million professional nurses were registered in the United States and its territories. Forty per cent, however, were inactive. Of the total of nearly 350,000 active nurses, fewer than 30,000, about 9 per cent, were reported in the field of public health and school nursing. An additional 14,000 were in industrial nursing. American Nurses Association, 2 Park Avenue, New York 16, N. Y.

A PACKET ON OLD AGE RETIREMENT

With the publication of its newest pamphlet, *Getting Ready To Retire,* the Public Affairs Committee adds to the growing literature on a subject that increases in importance as the nation's population becomes an increasingly older population. The theme is getting ready for this period of life as for any other period. And that means beginning young to build happy, constructive activity. The new pamphlet is also included in a kit on *Retirement and Old Age,* including some older titles. Public Affairs Pamphlets, 22 East 38th Street, New York 16, N. Y. 25¢, kit of 5, $1.00. Reduction on quantity orders.

CIVIL DEFENSE

Two recent reports of the Federal Civil Defense Administration are important to public health. *Blood and Blood Derivatives Program,* provides federal, state, and local civil defense organizations with the latest information on the operation of blood programs, including estimates of the requirements for whole blood, plasma, and equipment necessary for the immediate needs of an emergency as contrasted with present resources.

Radiological Decontamination in Civil Defense is particularly useful to radiological defense personnel since it can "serve as an operation manual for decontamination crews!"

Both are available from the Superintendent of Documents, Washington 25, D. C.; 40 and 15 cents respectively.

WHERE DOES YOUR CITY STAND?

How Does Your City Rate? is a useful booklet for making comparisons among the 57 largest metropolitan areas with populations of 250,000 or more in regard to 41 population and housing characteristics. Descriptive analyses, some with bar diagrams, are provided for the 12 largest urban areas for 25 of the 41 characteristics. The basic data are provided in charts for all the areas and characteristics. This is the product of the Research Bureau of the Social Planning Council of St. Louis and St. Louis County, 505 N. 7th Street, St. Louis 1, Mo.; $2 Paperbound.

FOOD HANDLER INSTRUCTION MADE EASY

Instructor's Guide—Sanitary Food Service, issued by the U. S. Public Health Service, provides the "menu" for eight consecutive two-hour training periods for food handlers, or "food service personnel." A revision of *Guide to Safe Food Service,* published in 1946, this new version has been prepared with the special problems of the Armed Services in mind. Latest technics in health education are heavily drawn on and liberal

use is made of new visual and teaching aid materials. Information on sources of training aids and brief reviews of more than 50 films, film strips, and sets of 2" x 2" slides are given in an appendix. Available from the Superintendent of Documents, Washington, D. C.; $1.50.

HEALTH SERVICES IN AN AGING WORLD

An important addition to the literature of health and medical problems arising out of the aging population of the United States is represented by *Illness and Health Services in an Aging Population*. Published by the Public Health Service, the 68-page pamphlet is made up of 4 papers presented in a session on illness and disabilities among older persons during the Second International Gerontological Congress in St. Louis in September, 1951. The papers summarize the presently known quantative data about illness among the older population, including the experience of the Health Insurance Plan of New York, as well as of Saskatchewan's services for the aging, and of a follow-up study of the Hagerstown Sickness Survey made 20 years ago. Public Health Publication 170, Gov. Ptg. Office, Washington 25, D. C.; 25¢.

A NEW REHABILITATION BULLETIN

Bulletin, first appearing in July, 1952, is the republication of the *Rehabilitation Review*, issued monthly by the American Rehabilitation Committee between 1927 and 1938. The new bimonthly, described as a forum on all matters that pertain to the disabled, will carry in each issue one major article on a subject of interest to all rehabilitation workers. The issue's first article was "Vocational Activity, a Therapy" by Frederic G. Elton, who is also editor of the *Bulletin*. This paper, presented at the 1952 meeting of the Baltimore League for Crippled Children, is reprinted from *The Councillor*, June, 1952. *Bulletin* is published by the American Rehabilitation Committee which invites material for publication. 28 East 21st St., New York. No information as to subscription price.

AUTOMATIC CLOTHES WASHERS

A Bacteriological Study of Automatic Clothes Washing, published by the National Sanitation Foundation, will answer some of the questions public health officials have frequently asked about possible health hazards associated with self-service public laundry installations. The study was made by a research staff under the direction of G. M. Ridenour, Ph.D., associate professor of public health engineering, University of Michigan School of Public Health.

Among the findings of the research, sponsored by the American Home Laundry Manufacturers' Association to determine the effectiveness of automatic clothes washers in removing or killing bacteria present in soiled clothing, are: most of the bacteria are removed in the wash cycle; good washing action (of the machine) and an effective detergent are the primary assets in laundry "sanitization"; using an effective detergent and hot water (about 145° F.) wash or rinse results in practically a complete destruction of bacterial contamination, and, ironing is not a reliable means of bacterial killing. The report is available from the National Sanitation Foundation, Ann Arbor, Mich.

WORTH ACQUIRING

Narcotics Addiction, A Bibliography is a comprehensive list of books and journal articles dealing with drug addiction. Compiled by the New York Academy of Medicine Library and issued jointly by the Academy and the Welfare and Health Council of New York City, the material is listed under eight types of drugs. There is also a general listing, one each on international

control, teen-agers, legal responsibility, U. S. methods of control, health education, and treatment. Available from Welfare and Health Council of New York City, 44 E. 23rd St., New York 10, 50¢.

Suggested Land Subdivision Regulations, prepared by the Division of Housing Research, Housing and Home Finance Agency, presents the important factors that should be considered by a community in establishing regulations for subdivisions. The suggestions would be of value also in those instances where formal regulations are not to be prepared but where the city fathers or a builder might want to know what is good practice in the development of new areas. The pamphlet has been prepared to cover "the technical elements of land subdivision contro designed to assure the maximum return on the local government's investment and at the same time to assure the subdivider full consideration of his interests and responsibilities." Superintendent of Documents, Washington 25, D. C., 45¢.

A Formula for Child Safety is the most recent attack of the Metropolitan Life Insurance Company and the American Academy of Pediatrics on the greatest killer of children—accidents. Prepared by the latter's committee on accident prevention, the pamphlet is made up of a series of pictures and text giving typical behavior for five age periods including the four-year old and for each age period a prescription of reminders for parents.

The pamphlet is based on, and in fact practically duplicates, an earlier pamphlet of the Academy prepared for and distributed chiefly to physicians through state academies or state health departments. This pamphlet is called *Are You Using the New Safety Vaccine?* It suggests the "vaccine" of safety education as a new immunization technic to be added to the health supervision program. This is one case in which the parents take the injection for the baby.

A Formula for Child Safety is available free from the Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y.

Accident Facts, 1952 Edition is the annual sad story told by the National Safety Council for its salutary effect, if any. The good news is that deaths from motor vehicle accidents increased less than two per cent. Per million miles of travel there was no change over 1950. In the 10 years since 1941 there has been nearly a 40 per cent decrease in deaths per 100,000,000 miles of travel.

The home accident death rate decreased by 2 per cent during the year and by more than one quarter in the 10-year period.

This is a deadly serious book. It has all the statistical ammunition needed for an accident prevention program in the home, the factory, the barn, the playground, and the highways. National Safety Council, 425 North Michigan Avenue, Chicago, Ill.

Catalogue is the 1952 catalogue of publications of the National Society for the Prevention of Blindness, with brief description and price of each item. Available without charge. 1790 Broadway, New York 19.

ANNUAL REPORT

The Problem of Health is the 1951 annual report of the San Jose, California, City Department of Health. It is short, with text and pictures of a sample of the dramatic activities of the Department. The statistical report is a separate volume that fits in the back of the more popular report and has everything even the most curious statistician could want, but it leaves something to be desired in both type and make-up.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Pennsylvania Pioneers Against Tuberculosis — *By Esther Gaskins Price. New York: National Tuberculosis Association,* 1952. 294 pp. Illus. Price, $5.00.

This volume is an important contribution to the history of public health in the United States. It is one of a series of studies sponsored by the Committee on Archives of the National Tuberculosis Association on the growth and development of the tuberculosis control movement. Esther Gaskins Price focuses on Philadelphia between 1885 and 1910, but sets the story within the larger framework of the national movement out of which grew the National Tuberculosis Association. Through the pages of this fascinating book pass many notable figures—the Bowditches, Leonard Pearson, Jacob and Solomon Solis-Cohen, and many others. Outstanding, however, is Lawrence F. Flick, who led the fight for tuberculosis control. It was Flick who won out over the opposition of the organized medical profession and gained the financial support for the establishment of the Henry Phipps Institute.

Among the opponents of the "contagiousness" theory of tuberculosis, Solomon Solis-Cohen receives a prominent place, but the author clearly indicates that Dr. Solis-Cohen had a well defined concept of the role of social factors in disease causation as a basis for his position. In fact, it is interesting to note that this was not unlike Virchow's position, which makes more sense to us today than it did in the golden age of bacteriology. Similarly, it is of interest that many of the arguments advanced by organized medicine against compulsory reporting of tuberculosis cases are not unlike those offered in opposition to compulsory sickness insurance. Still another point of interest is the significant role played by labor through its leaders and organizations.

The volume is based on extensive research, and provides exciting reading. It gives a dramatic account of an important public health program, and indicates once again that with our concepts of ecology, social medicine and comprehensive medical care, we are returning to points of view that were clearly seen and implemented by the pioneers of public health. This is a must for every worker, teacher, and student in public health and medicine. GEORGE ROSEN.

Wide Neighborhoods—*By Mary Breckinridge. New York: Harper,* 1952. 366 pp. Price, $4.00.

This book is the challenging story of the Frontier Nursing Service and of its founder, Mary Breckinridge. Earlier experiences of the author in many parts of the world provide interesting background to the portrayal of the founding and the development of the Frontier Nursing Service in a remote Kentucky mountain area.

The Service began with a nursing center in 1925. Throughout the surrounding 1,000 square miles of rough mountain country not a single physician was in residence. Now the Frontier Nursing Service has eight nursing centers, a 25-bed hospital, a medical director, and a staff of hospital nurses and of nurse-midwives.

Wide Neighborhoods tells of the organization of health care services, particularly for children and mothers, in a highly inaccessible rural area. As the author says, "None who wanted to copy our work could plead that it would be more difficult for them than it had been

for us." The story reveals the Frontier Nursing Service as an undertaking permeated with a spirit of high devotion buttressed by very ingenious practicality in achieving results. Useful generalizations are sprinkled throughout the book.

This book will directly challenge persons interested in health care for children and mothers living in rural areas. Workers in all types of health services will be intrigued by the useful details as to how the Frontier Nursing Service developed and was integrated into the life of a rural area. DONALD G. HAY

Sanitation for the Food Preservation Industries—*Prepared by the Association of Food Industry Sanitarians, Inc., in coöperation with the National Canners Association. New York: McGraw-Hill,* 1952. Price, $5.00.

Here we have a book that gives a comprehensive check list for the sanitary inspection of food manufacturing plants. It starts off with an all too brief chapter on the Organization of the Sanitation Program. Good coverage of the subject is given in the chapters on Inspection Techniques, Housekeeping, and particularly the chapters on Animal Pests and Insect Pests. The chapters on Construction and Maintenance of Buildings and Equipment, and on Cleaning are well handled. They include very effective illustrations and charts and explanations of the latest practices. The discussion on Chlorination should be brought up to date by presenting a more advanced type of equipment than the primitive barrel type hypochlorite feeding device. The statement in this chapter that "generally speaking, gas chlorinators give more accurate control than hypochlorinators and require less maintenance," can be challenged as to accuracy.

The chapters on Water Supply and Waste Treatment and Disposal tend to oversimplify greatly these subjects. A better service to readers would have been performed if the writers had pointed out that highly technical specialists, chemists, and sanitary engineers experienced in these fields should be consulted for the best solutions of water supply and waste disposal problems.

The final chapter in this book deals with Laboratory Aids, in which many of the paragraphs are taken from *Standard Methods for the Examination of Water and Sewage*. There is a most useful "glossary of terms" added at the end of the volume.

As may be gathered from the above comments, this book deals in an elementary way with the sanitary aspects of food processing, but should prove helpful in introducing food inspectors and processors to many of the problems that relate to quality and safety. The printing and general make-up of the volume are good, and the many photographs and charts are clear and well selected. SOL PINCUS

Causes and Prevention of Tuberculosis—*By Brice R. Clarke. Baltimore, Md.: Williams & Wilkins,* 1952. 288 pp. Price, $6.50.

This thoroughly readable book shows the author's familiarity with modern world tuberculosis literature. It is almost encyclopedic in its array of data—bedside, laboratory, and epidemiological. Material is presented in such profusion that the reader, unless well fortified by knowledge of his own, is likely to become confused. The value of the book, however, is unquestioned, especially for those who wish to understand tuberculosis trends and activities in Great Britain.

It is possible in this short review to mention only a few of the author's conclusions, some of which are at variance with views held in the United States.

In the foreword the author says, "the creation of the modern welfare state has

led and will lead to improved facilities for treatment, but its administrative machinery is better geared for treatment than for prevention." This is a criticism that has been voiced by others.

In speaking of the advances in diagnosis the author correctly states that in miniature x-ray surveys strict attention to detail must be observed. "Perhaps in no other branch of radiology is it so important to maintain a high standard of radiographic technique and careful dark-room processing."

Young adults (especially females) are considered the most important group in Great Britain to be included in mass x-ray surveys, whereas in many parts of the United States elderly males are so regarded.

Great Britain has not yet adopted PPD widely, preferring Old Tuberculin. The positive reactors remain hign under age 15 in Eire and in parts of England and Scotland. In the British Isles tuberculosis is still the largest single cause of death in children of school age.

In the British Isles as late as 1945 the records show that bovine tuberculosis was still a serious problem. Holm is quoted to the effect that "tuberculous milk infection protects against tuberculous infection of the lungs," but the author rightly says that this crude method of prevention is no longer favored.

The author contends that primary tuberculosis patients with tubercle bacilli recovered by gastric lavage are noninfectious, and claims that this is substantiated by a negative Mantoux for an indefinite period in household contacts. But regarding the prognosis of primary tuberculosis, he is certain that it is more serious if initiated in adolescence than in childhood. This is still a controversial matter. Myers in his recent volume, *Tuberculosis Among Children and Adults*, says, "Those who are infected for the first time during or after adolescence are neither better nor worse risks than those infected earlier as far as chronic reinfection type tuberculosis is concerned.

As to factors lowering resistance to the disease, low-protein diet is considered culpable. Evidence implicating other forms of malnutrition is scanty.

The author is not dogmatic in his attitude regarding the frequency of exogenous superinfection. He simply states that it is an open question on how important it is to protect Mantoux-positive persons.

Regarding BCG, the wise statement is made that one "must emphasize the limited nature of the protection and the need for precautions to prevent massive or frequent exposure."

In treatment it is still necessary in Britain for many patients with active disease to remain in the home. The author advocates having patients continue their occupations (unless the work is clearly unsuitable) if they have early, symptomless, nontoxic tuberculosis.

JOHN H. KORNS

School Health and Health Education—*By C. E. Turner (2nd ed.). St. Louis, Mo.: Mosby*, 1952. 472 pp. Price, $3.50.

This is a revision of an earlier edition which was published in 1947. The book was written as a text for teachers in training and for those in service who wish information about school health problems.

The author has organized the subject matter in a manner eminently suited for teaching purposes. Students will find the book interesting and easy to read. Instructors will find the questions at the end of each chapter a valuable improvement in the revised edition.

A page by page comparison with the earlier edition reveals that the basic content has been enriched by an expanded discussion of some of the items, references have been brought up to

date, and newer developments in public health which have a bearing on the school health program have been included.

The general format and printing is an improvement over the earlier edition. This book will continue to help teachers and others interested in the health of school age children to gain an understanding of the scope and content of school health and health education.

S. S. LIFSON

Cybernetics. Circular Causal and Feedback Mechanisms in Biological and Social Systems—*Edited by Heinz von Foerster. New York: Josiah Macy, Jr. Foundation,* 1952. 240 pp. Price, $4.00.

This volume records the transactions of the Eighth Conference on Cybernetics sponsored by the Josiah Macy, Jr. Foundation. As is customary at these meetings, the participants were specialists in their respective fields, but all focused on a common topic, in this case, exploring the problem of communication. This general subject was divided into the following topics: communication patterns in problem-solving groups, the meaning of language, communication between the sane and the insane, communication between animals, and finally a discussion of basic symbols in communication. In addition, one of the participants presented and discussed a maze-solving machine. Each topic was given a brief formal presentation and then discussed.

Indeed, discussion is at the heart of this volume and provides one of its most attractive and exasperating features. It is interesting and stimulating to sit back and "listen in" while the participants carry on their verbal Donnybrook. At the same time, it is quite disconcerting to observe the looseness of reasoning and the lack of precision in thinking exhibited by most of the participants. Many of the participants employ analogical reasoning, a most deceptive and treacherous even though stimulating mode of thought, and tend to succumb to the conceptual perils inherent in this approach.

Special mention should be made of J. A. Richard's comments on the teaching of language and of H. G. Birch's discussion of communication among animals, two of the more valuable presentations. This volume will be of interest to any health worker concerned with problems of communication. There is no index, but the book has two appendixes, one listing the nomenclature of information theory, the second giving selected references for each of the papers presented at the conference.

GEORGE ROSEN

Annual Epidemiological and Vital Statistics, 1939–1946. Part I, Vital Statistics and Causes of Death. Part II, Causes of Death from Notifiable Diseases—*World Health Organization. New York: Columbia University Press,* 1952. Part I, 746 pp. Price, $10.00. Part II, 326 pp. Price, $4.00.

All those who have reason to use comprehensive international vital statistics will be grateful for the extensive effort which has gone into the preparation of these two volumes. Part I covers *Vital Statistics and Causes of Death* for a two-year period and is supplemental to the 1939–1946 edition which appeared in 1951, being a continuation of the *Annual Epidemiological Reports* formerly published by the League of Nations Health Organization.

Although the data are manifestly incomplete for some parts of the world, Part I does have comprehensive tables of marriages, births, fertility, general mortality, infant mortality, and neonatal mortality. The section on causes of death, which makes up most of the volume, gives for each country the distribution of the total deaths by cause in accordance with the headings of the

1938 international abridged list. There are further tables devoted to such facts as mortality rates for specific diseases in certain large cities, the most recent life tables, and expectation of life by sex and specified ages.

Part II presents morbidity and mortality records for all countries from 1939 to 1946, also arranged so that it follows on without a break from the series published by the League of Nations from 1923. Thirty diseases are included, ranging from plague to puerperal infection and including the rickettsioses, malaria, leprosy, syphilis, influenza, and the communicable diseases of childhood. The records cover more than 150 political areas.

It is appropriately pointed out in the foreword of these volumes that these statistics should be treated with a certain amount of caution and that care should be exercised in making comparisons between them. There is great diversity in the methods and extent of registration, and there is a continuing lack of accuracy in diagnosing causes of death. Nevertheless, this work does provide the most complete and authoritative information on the question and the series is a basic item in any medical library. REGINALD M. ATWATER

The Adolescent and His World—*By Irene M. Josselyn, M.D. New York: Family Service Association of America,* 1952. 124 pp. Price, $1.75.

Many people working professionally with adolescents are almost as much confused about problems of adolescence as are the youngsters themselves. This book will be useful to them whatever their degree of psychiatric sophistication, although some theoretical background knowledge of personality development and psychodynamics would make it more so. It is not primarily directed at parents or lay readers without any psychiatric background but, since the emphasis is on what is normal, it probably would not be upsetting to any untrained person into whose hands it might come. On the other hand it might well be required reading for anyone having professional responsibility for adolescents.

Dr. Josselyn places emphasis on the revision, during adolescence, of the individual's concepts of and relations to other people, testing out old attitudes and defenses that were useful during childhood and replacing them when indicated with new ones more appropriate to adult living. She points out how awareness of these changes may be applied in counseling relations and psychotherapy, and she has some very interesting comments to make on the positive values of coeducation for adolescents, which are warmly seconded by this reviewer.

In a very stimulating chapter devoted to problems of sex education, she cites some very convincing observations to support her conclusions that lectures consisting primarily of instruction in anatomy and physiology do not fit the needs of adolescents and that group discussions of the emotional problems of adolescent sexuality may be equally undesirable because, she says, "Quite possibly for many youngsters the anxiety may be intensified rather than diminished." Should Dr. Josselyn be correct in this conclusion, then it is time that those of us who have been sponsoring programs of sex education in high schools should reëxamine our procedures and goals. ELIAS J. MARSH

Reduce and Stay Reduced—*By Norman Jolliffe, M.D. New York: Simon and Schuster,* 1952. 235 pp. Price, $2.95.

The importance of the obesity problem to the average layman is manifested by the numerous quack cures, fad diets, and the amounts of money spent annually for the various types of reducing aids. If the average layman could be

educated away from the false premises and promises of these nostrums and reducing salons by good, honest, accurate information presented in an understandable and readable fashion, he could be saved from the dangers and economic losses inherent in these systems.

Dr. Jolliffe, in his *Reduce and Stay Reduced*, does exactly what should have been done a long time ago. While he does not insult the intelligence of the reader, he manages to give a tremendous amount of metabolic information in simple terms. In addition, he has outlined a series of menus and food exchanges in the manner which diabetics have found so useful and important. The application of this proven system to the problem of obesity will find wide acceptance. It is a book which must be recommended by all physicians to the patient who is a fat fighter.

HERBERT POLLACK

The Municipal Year Book, 1952—*Edited by Clarence E. Ridley and Orin F. Nolting. Chicago: International City Managers' Association*, 1952. 604 pp. Price $10.00.

This is the nineteenth annual volume of the *Municipal Year Book*, an indispensable reference not only for municipal officers for whom it is intended, but for anyone interested in factual and statistical data on individual cities throughout the country.

This volume follows the same pattern as in the preceeding issues of the *Year Book*. Developments in public health, public welfare, housing, public works, parks and recreation, and schools and education are among the regular sections which are retained and brought up to date. Ira V. Hiscock, Sc.D. is again the author of the section on public health. "Sources of Information" and "Selected Standard References" are a part of each section.

The 1952 volume carries the final 1950 census figures for cities over 5,000. New features in this edition include individual city data on traffic safety and on revenue, expenditure, and debt for cities of from 5,000 to 25,000 population.

For the convenience of the researcher, the index in each volume includes references to previous editions.

EDITH M. BOYD

The Urban Working-Class Household Diet 1940 to 1949—*First Report of the National Food Survey Committee, Ministry of Food. London: His Majesty's Stationery Office*, 1951. Price, 3s, 6d.

This excellent body of data summarizes the results of national surveys made by the British Ministry of Food during the war and postwar years of 1940 to 1949. It is a narrative of changes in working-class food consumption set against the background of the British food supply situation and food policy during these stressful years. The size of the sample, over 7,000 households on the average, and the year-to-year uniformity in method of collecting data, in sampling by region, urbanization and occupation, and in statistical analyses of the data give strength to a valuable time series which any nation would be fortunate to have for use in planning foods needed for adequate diets, for emergency situations, or for long-range prospects of population changes.

The report is presented in three main sections, dealing with dietary trends before the war, national diet during the war when food controls were introduced, and the national diet after the war. In the last two sections, the quantity consumed and percentage contribution of nutrients by food groups and by rationed and unrationed foods are shown separately by years and sometimes by quarters. Thus, the dietary effect of national food programs can be traced, such as the changes in processing of flour, rationing of scarce commodities,

shifts in domestic production of others, and expanded imports of many in the postwar years.

As valuable as such a time series is for the nation itself, the data must be used cautiously in international comparisons. Many essential details are given in this report to safeguard judicious use by others. Users must be aware of differences in the United States in grouping foods, in fluid measures of milk and other liquids, and in the nutritive value and yield of prepared food from food as purchased due to varietal and processing differences. The composition and characteristics of the population, such as age distributions and proportions of men absent in military service, size at a given age, nutritional status or occupations of the people, may alter the significance of food quantities, calories and nutrients reported on a per capita basis, or any other unit in common use.

CALLIE MAE COONS

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ALCOHOL EDUCATION. A GUIDE-BOOK FOR TEACHERS. Joseph Hirsh. New York: Henry Schuman, 1952. 97 pp. Price, $2.50.

ANTIBIOTICS. A SURVEY OF THEIR PROPERTIES AND USES. S. J. Edwards, A. Kekwick, *et al.* London: The Pharmaceutical Press, 1952. 269 pp. Price, 25s.

ARE THESE OUR DOCTORS? Evelyn Barkins. New York: Frederick Fell, 1952. 192 pp. Price, $2.50.

CONNECTIVE TISSUES. TRANSACTIONS OF THE THIRD CONFERENCE, FEBRUARY 14–15, 1952. New York: Josiah Macy, Jr. Foundation, 1952. 166 pp. Price, $3.50.

CONTEMPORARY ETHIOPIA. David A. Talbot. New York: Philosophical Library, 1952. 262 pp. Price, $4.50.

ESSENTIALS OF DERMATOLOGY. Norman Tobias. (4th ed.) Philadelphia, Pa.: Lippincott, 1952. 578 pp. Price, $6.00.

EXTRA PHARMACOPOEIA (Martindale) 23rd ed. Vol. I. London: Pharmaceutical Press, 1952. 1270 pp. Price, 55s.

FORENSIC PSYCHIATRY. Henry A. Davison. New York: Ronald Press, 1952. 398 pp. Price, $8.00.

HANDBOOK OF TROPICAL DERMATOLOGY AND MEDICAL MYCOLOGY. R. D. G. Ph. Simons, Editor. New York: Elsevier Press, 1952. 813 pp. Price, $15.00.

HEALTH RESOURCES IN THE UNITED STATES. George W. Bachman, *et al.* Washington, D. C.: Brookings Institution, 1952. 360 pp. Price, $5.00.

INSPECTION OF FOOD. Horace Thornton. Baltimore, Md.: Williams & Wilkins, 1952. 211 pp. Price, $3.00.

INTERPERSONAL RELATIONS IN NURSING. Hildegard E. Peplau. New York: Putnam's Sons, 1952. 319 pp. Price, $5.00.

INTRODUCTORY MYCOLOGY. Constantine John Alexopoulos. New York: Wiley, 1952. 456 pp. Price, $7.00.

JORDANS DICTIONARY OF CIVIL DEFENCE. Edited by Carlton Wallace. New York: Philosophical Library, 1952. 160 pp. Price, $2.75.

KITCHEN STRATEGY. THE FAMILY ANGLE ON NUTRITION. Leona M. Bayer and Edith Green. Springfield, Ill.: Thomas. 112 pp. Price, $3.75.

LABOR PLAN FOR HEALTH. THE SAN FRANCISCO LABOR COUNCIL SURVEY. E. Richard Weinerman. San Francisco: San Francisco Labor Council, American Federation of Labor, 1952. 45 pp.

LEAD IN MODERN INDUSTRY. New York: Lead Industries Association, 1952. 223 pp. Price, $1.50.

LINDA KENT, STUDENT NURSE. Dorothy Deming. New York: Dodd, Mead, 1952. 274 pp. Price, $2.50.

LIVING WITH CANCER. Edna Kachele. New York: Doubleday, 1952. 160 pp. Price, $2.00.

MAN AGAINST CANCER. I. Berenblum. Baltimore, Md.: Johns Hopkins Press, 1952. 178 pp. Price, $3.00.

MEASUREMENT OF HEARING. Ira J. Hirsh. New York: McGraw-Hill, 1952. 354 pp. Price, $6.00.

MEDICAL INSPECTION OF SCHOOL CHILDREN. Edgar Henry Wilkins. Baltimore, Md.: Williams & Wilkins, 1952. 218 pp. Price, $4.00.

MEDICAL PUBLIC RELATIONS. A STUDY OF THE PUBLIC RELATIONS PROGRAM OF THE ACADEMY OF MEDICINE OF TOLEDO AND LUCAS COUNTY, OHIO, 1952. Edgar A. Schuler, Robert J. Mowitz, and Albert J. Mayer. New York: Health Information Foundation, 1952. 216 pp.

MICROBIOLOGY. Florence C. Kelley and K. Eileen Hite. New York: Appleton-Century-Crofts, 1952. 569 pp. Price, $5.50.

MICROBIAL GROWTH AND ITS INHIBITION. FIRST INTERNATIONAL SYMPOSIUM ON CHEMICAL MICROBIOLOGY. World Health Organization. New York: Columbia University Press, 1952. 286 pp. Price, $3.00.

NERVE IMPULSE. TRANSACTIONS OF THE THIRD CONFERENCE MARCH 3–4, 1952. H. Houston Merritt, Editor. New York: Josiah Macy, Jr. Foundation, 1952. 176 pp. Price, $3.50.

NUTRITION IN THE PRACTICE OF MEDICINE. PROCEEDINGS OF THE NUTRITION SYMPOSIUM, OCTOBER 30, 1951. J. Arnold Bargen, Paul R. Cannon, *et al.* New York: National Vitamin Foundation, 1952. 163 pp. Price, $1.50.

ON THE SOCIAL FRONTIER OF MEDICINE. Ida M. Cannon. Cambridge, Mass.: Harvard University Press, 1952. 266 pp. Price, $4.75.

PRACTICAL CLINICAL CHEMISTRY. I. PRINCIPLES. II. NOTES ON METHODS. III. SOLUTIONS AND REAGENTS. Nell F. Hollinger, Richard K. Lansing, *et al.* Millbrae, Calif.: National Press, 1952. Price, $4.50.

RHEUMATIC FEVER. A SYMPOSIUM. Edited by Lewis Thomas. Minneapolis, Minn.: University of Minnesota Press, 1952. 325 pp. Price, $10.00.

ROCKEFELLER FOUNDATION. A REVIEW FOR 1950 AND 1951. Chester I. Harnard. New York: Rockefeller Foundation, 1952. 125 pp.

THIRD INTER-AMERICAN CONGRESS ON BRUCELLOSIS. NOVEMBER 6–10, 1950. Washington, D. C.: National Research Council, 1952. 302 pp. Price, $5.00 cloth, $3.25 paper.

USE OF HEALTH RESOURCES BY RURAL PEOPLE IN TWO WESTERN NEW YORK COUNTIES, 1950. Donald G. Hay and Olaf F. Larson. Ithaca, N. Y.: New York State College of Agriculture, Cornell University, 1952. 38 pp.

VIRAL AND RICKETTSIAL INFECTIONS OF MAN. Thomas M. Rivers, Editor (2nd ed.). Philadelphia, Pa.: Lippincott, 1952. 680 pp. Price, $7.50.

WHISPERINGS. PRENATAL CARE AND THE NEWBORN. John A. Freel. New York: Vantage Press, 1952. 89 pp. Price, $2.75.

WHITE PLAGUE. TUBERCULOSIS, MAN AND SOCIETY. Rene and Jean Dubos. Boston, Mass.: Little, Brown, 1952. 269 pp. Price, $4.00.

WONDERFUL STORY OF HOW YOU WERE BORN. Sidonie M. Gruenberg. Garden City, N. Y.: Hanover House, 1952. 39 pp. Price, $2.00.

YOUR BRAIN AND YOU. G. N. Ridley. New York: John de Graff, 1952. 200 pp. Price, $4.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Who Said Weaker Sex?—Increasing ratios of male over female deaths (from natural, industrial, and war causes) plus a net surplus of female immigrants place American women, numerically speaking, ahead of men by a margin of a million and a half.

ANON. Why Women Outnumber Men. *Statist. Bull. Metrop. Life Insur. Co.* 33, 8:1 (Aug.), 1952.

Fluoridation Statistic—Quoting from the subtitle: Survey shows 246 plants in use (as of July 1, 1952) and the practice actively encouraged by health departments in 27 states. End of quote. Three state health departments still feel they want proof that this newfangled gimcrack really works!

ANON. Growth of Fluoridation in U. S. *Water Works Engineering* 105, 9:842 (Sept.), 1952.

Fat Penalties—A yard long list of the diseases that are the penalties of overweight should warn you to tread the straight-and-narrow dietary path before you become sorry you didn't.

ANON. The Handicaps of Overweight. *Statist. Bull. Metrop. Life Insur. Co.* 33, 8:3 (Aug.), 1952.

Grim Reminder—In this country there are 1,200,000 tuberculous. Half a million are known to health departments (half are active cases). Only 105,000 are in hospitals. Tuberculosis is still far from controlled. We need more beds, more clinics, more and better-trained personnel. Isoniazid isn't a substitute for these facilities.

ANDERSON, R. J. A New Tuberculosis Drug? *Pub. Health Rep.* 67, 9:484 (Sept.), 1952.

Space Shipping—Earth-bound indeed must be the reader who is not chilled and thrilled by this discussion of our present knowledge of the hazards of flying through space (meteorite collisions included). I read every word in goggled-eyed concentration even though there could be, for me, not one iota of practical utility in the whole paper.

CAMPBELL, P. A. Medical Aspects of Flight Above the Atmosphere. *J.A.M.A.* 150, 1:3 (Sept. 6), 1952.

What the People Want—They Get—Writing about the (Br.) medical services, the Editor of the *British Medical Journal* adds this sage dig: "Doctors on both sides of the Atlantic have allowed their emotional reactions to get the better of them. . . . The human cerebral cortex is a relatively late evolutionary development but physicians should not let the thalamus run away with it."

CLEGG, H. Background to Britain's Health Service. *New England J. Med.* 247, 12:435 (Sept. 18), 1952.

Translated from the Norwegian—This is an abbreviated book the burden of which is that tuberculosis testing (here called "matriculation") via repeated tuberculin skin tests is the most feasible method of finishing up the job. Mass radiography as a screening method is still valuable among urban groups, it is agreed, but it will not prove the basic method in the long run. BCG for exposed persons will help, too.

GEDDE-DAHL, T. Tuberculous Infection in the Light of Tuberculin Matriculation. *Am. J. Hyg.* 56, 2:139 (Sept.), 1952.

Basic Socal Objective—We've come a long way from the easy nuisance-abatement era of sanitation. All that can happen now-a-days to the food we eat, the water we drink, the air we breathe, the homes we live in and on the roads we travel has made environmental health a highly complex discipline, and "the speed of progressive technology has tossed us far out onto unchartered waters." Don't you think that you had better read this paper?

HOLLIS, M. D. Environmental Health Needs in a Dynamic Society. *Pub. Health Rep.* 67, 9:903 (Sept.), 1952.

None Too Soon—Every seventh person dies of cancer. To do something about this, a broad preventive program is envisioned to comprise: medical student education; postgraduate training for physicians and nurses; improving diagnostic aids; special training for other public health workers; case finding ventures; and education of the public. There are signs of progress.

KAISER, R. F. Cancer Control in the United States. *Pub. Health Rep.* 67, 9:877 (Sept.), 1952.

Gaggle of Gossips—This is too priceless for you to miss: "At present much of the health visitor's work is being detached from her by the school nurse, if any, the tuberculosis visitor, the mental welfare officer, the school attendance officer or, to give him his fancy name, the social welfare officer, the psychiatric social worker, the children's officer, the moral welfare officer, the probation officer, the VD social worker, the

district nurse, the home help, the housing manager and, if they were given any encouragment, we should probably see at their heels the hospital almoner, the dental hygienist, with, hovering in the background, the orthopist and the speech therapist. After this gaggle of gossips has invaded the home in the morning, the NSPCC man may well come in at 12 noon to find that the mother, after giving a mayoral reception to this flock, has had no time to cook the meal, and is therefore neglecting her children! Two months hard!"

PAUL, H., *et al.* Symposium on Modern Trends in the Work of the Health Visitor and Their Relation to Her Training. *J. Roy. San. Inst.* 72, 5:630 (Sept.), 1952.

Pity the Poor Publicist—Thanks to modern antibiotics and surgical intervention, selected cases of tuberculosis can now safely be handled at home, asserts this TB specialist. Do you suppose our frantic health educators will now have to execute another about-face?

SCHNEIDER, L. Treatment of Pulmonary Tuberculosis at Home. *New York State J. Med.* 52, 16:1999 (Aug. 15), 1952.

People and Their Needs—Group dynamics de-bunked and de-jargonized (if I may coin a word) is the best way to characterize this useful discussion about inducing (health) working people to think about their jobs.

SHETLAND, M. L. Work Conferences Promote Growth. *Pub. Health Nursing* 44, 9:484 (Sept.), 1952.

Children in School—Communicable diseases and attendance, meaning of health examinations, special facilities for the handicapped, and follow-up for health improvement, all are discussed here with admirable clarity in a down-to-earth presentation.

WISHIK, S. M. School Health Trends as They Affect the Nurse. *Pub. Health Nursing* 44, 9:488 (Sept.), 1952.

Vs. "Obstetrical Factories"—These four papers on maternity services and problems—mental as well as medical and administrative—seem to have much of interest in them for health workers other than the public health nurses before whom they were read. You will be repaid if you sample all four whatever your job may be.

WOOTTEN, B. G., *et al.* A Psychosomatic Approach to Maternity Care (and three related papers). *Pub. Health Nursing* 44, 9:493 (Sept.), 1952.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Am. J. Hyg. (American Journal of Hygiene). Johns Hopkins University, School of Hygiene and Public Health. Johns Hopkins Press, Baltimore 18, Md.

J.A.M.A. (Journal of the American Medical Association) 535 N. Dearborn St., Chicago 10, Ill.

J. Roy. San. Inst. (Journal of the Royal Sanitary Institute) 90 Buckingham Palace Road, London, S.W.1, England.

New England J. Med. (New England Journal of Medicine) Massachusetts Medical Society and the New Hampshire Medical Society, 8 Fenway, Boston 15, Mass.

New York State J. Med. (New York State Journal of Medicine) Medical Society of the State of New York. 386 Fourth Ave., New York 16, N. Y.

Pub. Health Nursing. (Public Health Nursing) National Organization for Public Health Nursing, 2 Park Ave., New York 16. N. Y.

Public Health Rep. (Public Health Reports) Superintendent of Documents, Gov. Ptg. Office, Washington, D. C.

Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company) Metropolitan Life Insurance Company, One Madison Avenue, New York 10, N. Y.

Water Works Engineering. 24 West 40th Street, New York 18, N. Y.

ASSOCIATION NEWS

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

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Gerardo Lopez, M.D., Carrera 4a, No. 21–55, Apt. 103, Bogota, Colombia, S. A., Director, Servicio Cooperativo Interamericano de Salud Publica Yaws Campaign

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Humberto R. Romero-Alvarez, Fundidora de Monterrey No. 89, Mexico, D. F., Mexico 14, Chief of Design Engineers, Sanitary Engineering Division, Ministry of Hydraulic Resources

Lt. Norman E. Waggoner, M.S.E., MCB No. 8, FPO, New York, N. Y., U. S. Naval Reserve, Navy Construction Battalion

Industrial Hygiene Section

N. Irene Bush, R.N., 889 20th Ave., Columbus 11, Ohio, Staff Nurse, Farm Bureau Insurance Companies

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Food and Nutrition Section

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R. D. Clark, 1730 E. 24th St., Cleveland 14, Ohio, Treasurer, The Clark Restaurant Company

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Maternal and Child Health Section

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Joan N. Jones, Broad Acres Farm, Shelton, Conn., Interested Citizen, Volunteer in Community Organization

Paul A. Miller, M.A., 936 Cresenwood Rd., East Lansing, Mich., Extension Rural Sociologist and Asst. Professor of Sociology, Michigan State College

Mary Mossman, M.S., 25 High St., Gardner, Mass., Trainee, Asst. Health Educator, New Haven Health Dept.

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Public Health Nursing Section

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Martha Tapannenen, R.N., Morrow County Health Dept., Heppner, Ore., Public Health Nurse

Marian Thomas, 701 North Tulane, Albuquerque, N. M., Supervisor of School Health, State Dept. of Education Santa Fe, N. M.

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Epidemiology Section

Major Benjamin D. Fremming, V.C., Walter Reed Army Medical Center, AMSGS, Washington 12, D. C., U. S. Air Force, Veterinary Corp

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Craig S. Lichtenwalner, M.D., Division of International Health, Public Health Service, Washington 25, D. C., Medical Officer, Imperial Highway Authority of Ethiopia

Nad Nanakorn, M.D., M.P.H., Public Health Dept., Bangkok, Thailand, Epidemiologist

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Lt. Col. William B. Snodgrass, V.C., Air Surgeon, Hqs. SAC, Offutt Air Force Base, Neb., Command Veterinarian, Headquarters, Strategic Air Command

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EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Health Officer—Grand Traverse-Leelanau County Health Department, serving two counties, population 40,000. Staff includes three nurses and three sanitarians. Salary $10,000, travel additional. Applicants subject to approval of local health committee and Michigan State Department of Health. Qualifications should be stated in first reply. Write: P. L. Clancy, Acting Director, Grand Traverse-Leelanau County Health Dept., Traverse City, Mich.

Health Officers—in preventive medicine and public health in various parts of the state. Must be graduate of an accredited medical college and not above the age of 55 when entering public health for first time. Salary range from $6,600–9,000, depending upon experience and public health training. Recent graduates eligible for beginning health officer positions at salary ranges from $6,000–6,600. One man with experience in tuberculosis work desired. Liberal travel allowance and retirement system. Write: Wilson T. Sowder, M.D., State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Fla.

Public Health Physician—as health officer for an established county health department of 37,000 in northwestern Illinois. Salary range $7,200–9,000, plus travel allowance. Usual vacation, sick leave, and retirement fund. Qualified physician may start above the minimum. Write: President, Lee County Board of Health, 123 East First St., Dixon, Ill.

Public Health Director—wanted by the City of Jackson, Mich., to take charge of city's public health program. Must have graduated from an accredited medical school and have some training in a recognized school of public health. Successful experience, as an administrator, in state or city health departments desired. Liberal vacations, cumulative sick leave, excellent retirement system. Salary open. Write stating qualifications Joseph A. Warren, City Manager, City Hall, Jackson, Mich.

Public Health Physicians—with training and experience in public health; salary $679–749; without experience, $587–647. Well rounded dynamic program. Write: Gordon W. Peterson, Director of Personnel, Dept. of Civil Service and Personnel, Room 402, Civic Center, San Diego 1, Calif.

Assistant Health Officer—Salary $696–816. **Public Health Dentist**—Salary $595–734. Progressive public health department with staff of 100 serving a community of 200,000 people in the San Francisco Bay Area. Training and/or experience and license to practise in California essential. Write: James C. Malcolm, M.D., Health Officer, Alameda County Health Dept., 576 Callan Ave., San Leandro, Calif.

Public Health Dentist—For health division. Salary $566–621. Entrance salary at minimum figure or higher if necessary to secure candidate. Necessary qualifications: D.D.S. Degree from an accredited dental school. Degree from accredited school of public health. Three years of progressively responsible experience in a public health dental program, including at least one year in an administrative or supervisory capacity. Competitive Civil Service examination now open only to male citizens of the United States. Write: Department of Personnel, Room 235 Municipal Courts Bldg., 14th and Market Sts., St. Louis 3, Mo.

Dentists—Half-time and full-time positions open in Cincinnati, Ohio, school dental clinics. Beginning salary $5,086. Retirement, vacation, and sick leave benefits. A good place to locate! Write: Dr. E. H. Jones, Dental Supervisor, 4th and Ludlow Sts., Cincinnati, Ohio.

Health Educator—Salary $359–424 per month. Two years experience in a health department and M.P.H. desirable. Write: Personnel Division, City Hall, Madison 3, Wis.

Health Educator—under the direction of executive secretary, to plan and develop health education programs with neighborhood groups; provide consultation to community committees; organize meetings and courses for adult groups; assist with promotional and educational aspects of case finding programs. Part of joint program of voluntary and official agency, district of large city. M.P.H. or graduate health education degree and three years experience or equivalent. Beginning salary $3,700—increase after probationary period. Write: **Box HE-49**, Employment Service, APHA.

Health Officer—in proximity to Camp Campbell, Tenn., City of Clarksville. Write: Judge W. D. Hudson, Chairman, Local Board of Health or State Dept. of Public Health, Nashville, Tenn.

Health Officer—for the City of Waterbury. Must have degree and experience in public health administration and be eligible for Connecticut licensure. Generalized active program; excellent community relations; vacations, retirement, etc. Write: Board of Health, Waterbury, Conn.

Health Officer and Director—Bay City-Bay County Health Departments with combined population of 85,000. Complete staff and facilities in two offices. Starting salary $10,500, plus $600 car allowance. Pension plan available. Write: Orlen J. Johnson, M.D., Acting Health Officer, Bay City Dept. of Health, Bay City, Mich.

The West Virginia State Health Department will accept applications for the following positions to be filled immediately:

Industrial Hygienist—Assistant grade (engineer or chemist). Minimum qualifications: baccalaureate degree in chemistry, engineering, or industrial hygiene, plus one year industrial hygiene experience or graduate training in industrial hygiene, chemistry, or chemical engineering. Salary: $3,240–4,200; starting salary commensurate with qualifications.

Industrial Hygienist—Associate grade (engineer or chemist). Minimum qualifications: baccalaureate degree in chemistry, engineering, or industrial hygiene, plus three years experience in industrial hygiene, or one year graduate work in industrial hygiene, or combination of one year graduate work in chemistry or chemical engineering and two years industrial hygiene experience. Salary: $3,840–4,800, starting salary commensurate with qualifications. Write: N. H. Dyer, M.D., State Director of Health, Charleston, W. Va.

Public Health Educator—for San Diego Department of Public Health. Generalized public health education program in large city-county department. Beginning salary $440 per month. Car necessary; mileage allowance provided. Applicants must have M.P.H. with major in health education and one year of experience as a health educator or in equivalent work. Write: J. B. Askew, M.D., Director, San Diego City-County Dept. of Public Health, Civic Center, San Diego, Calif.

Public Health Engineer or Sanitarian III—as chief, general sanitation services. Responsibilities: Direct general sanitation services which include restaurant and food establishment inspections, private water and sewage disposal, swimming pools, premises sanitation, institutions. Responsible for directing activities of 15 sanitarians. Desirable experience and training: graduate from recognized course in sanitary science, food or milk technology, or engineering, plus experience in sanitation administration. Salary range: $400–500 plus travel.

Public Health Engineer or Sanitarian I—(General Sanitation Section) Desirable experience and training: graduation from a recognized course in sanitary science, food or milk technology, or engineering, plus field training or experience. Additional inservice training will be provided by the department. Salary range: $268–335. Write: J. Robert Cameron, Director, Sanitation Division, Dept. of Health and Hospitals, Denver, Colo.

Sanitarian—For progressive Connecticut community of 35,000. Necessary qualifications include: college degree, training in field sanitation activities and teaching methods. Some experience preferred. Basic salary commensurate with ability and qualifications with yearly increment. Must own car. Travel allowance nine cents per mile. Retirement benefits, adequate sick leave, and vacation. Write: **Box S-14**, Employment Service, APHA.

Sanitarian—Mendocino County, Calif. Must be eligible for registration in California. Five-day, 40-hour week, sick leave, and employee's group insurance. Mandatory retirement plan. No Civil Service, but employees have job protection. Must have own car. Salary $315 per month, plus $100 per month travel allowance. Write: C. R. Kroeger, M.D., Health Officer, 880 N. Bush Street, Ukiah, Calif.

Sanitarian—Staff consists of two sanitarians and a public health engineer. Generalized program with emphasis on milk and food handling establishments. Services also cover disposal plants, swimming pools, private and public water supplies. Salary up to $330 per month. Write: Director, McLean County Health Dept., 1009 N. Park St., Bloomington, Ill.

Veterinarian—to supervise and direct a municipal meat control service. Preferably with a master's degree in public health. Should have at least five years practical experience in meat inspection, at least two of which are in a supervisory capacity. Should be capable of correlating local meat inspection service with a well rounded veterinary public health program. Candidate should not be over 45. Salary range $6,118–6,776 per year. Write: Municipal Civil Service, Dept. of Person-

nel, Room 235 Municipal Courts Bldg., St. Louis 3, Mo.

Veterinarian—for public health meat control. Experience in meat inspection preferred, but not essential. Annual starting salary $3,934 with yearly increments; maximum $4,275. Two weeks vacation, sick leave, and liberal disability and retirement benefits. Give age, experience, references, and other particulars. Permanent position, Jefferson County Board of Health, Birmingham, Ala.

Public Health Nurse—East San Francisco Bay location. Generalized program, liberal mileage, vacation, sick leave, retirement. Forty hours per week. Salary: $326–392.

Senior Staff Public Health Nurse—Generalized program, liberal mileage, vacation, sick leave, retirement, 40-hour week. Two years experience, nine months residency. Salary $357–429.

Public Health Nurse—Rural area, 70 miles from San Francisco. Generalized program, liberal mileage, vacation, sick leave, retirement, 40-hour week. Salary $374–449. Write: H. L. Blum, M.D., Contra Costa County Health Officer, 900 Court St., Martinez, Calif.

Supervising Nurse—County health department in central Illinois. Population 76,000. Generalized program. Nursing staff, eight to ten nurses. Five day week, two weeks vacation, two weeks sick leave each year. Salary up to $425 per month. Substantial travel allowance for personal car.

Staff Nurse—must have car. Liberal travel allowance. Certified, or have qualifications for certification in Illinois, salary up to $325 per month. Write: Director, McLean County Health Dept., 1009 N. Park St., Bloomington, Ill.

Public Health Nursing Instructor—B. S. Degree required, Salary $3,600. Position offers challenge to public health nurse interested in integrating public health and social studies into curriculum. Large southern hospital with excellent facilities. Write: Miss Beatrice McGavin, Director of Nursing, Baroness Erlanger Hospital, Chattanooga 3, Tenn.

Public Health Nurses—City of Kalamazoo has vacancies in its City-County Health Department for public health nurses, Grades I, II, and III. Salaries $3,300, $3,600, and $4,200 respectively. Write: Department of Personnel, City Hall, Kalamazoo, Mich.

Public Health Nurse—Must have California Public Health Nurse Certificate, generalized county program, $290–349 per month. Thirty-eight hour week, 15 days vacation, mileage or car furnished. Write: Civil Service Commission, 967 Osos St., San Luis Obispo, Calif.

Public Health Nurse—Generalized program including school health in city of 11,000 population. Two salary ranges, based on degree of preparation, starting at $3,600 and $4,080. Liberal personnel practices including eight cents per mile for use of personal car. Write: Dr. William C. Henske, City Health Officer, Chippewa Falls, Wis.

Public Health Nurses—in generalized program. Monthly salary range $319–349, 40-hour week, paid vacation and illness, uniform allowance, transportation furnished. Certificate in public health nursing required. Nurses with unmet certificate credits may qualify through local university program. Salary $295–305. Write: Superintendent of Nurses, Milwaukee Health Dept., Milwaukee, Wis.

Public Health Nurses—Do you want to work where scenery is beautiful, weather is good, and recreation is bountiful? Salary range $284–341 per month. Vacation and sick leave is adequate; 40-hour week; mileage allowance; under Civil Service. As Luther Burbank has said: "This is the place." Write: Health Officer, Robert S. Westphal, M.D., 3325 Chanate Road, Santa Rosa, Calif.

Nursing Supervisor — for Baltimore County Health Department. Degree and special preparation in tuberculosis nursing required; salary $3,900–4,875. Also **Public Health Nurses** — Salary for qualified $2,961–3,750; junior $2,646–3,150; trainee, $2,520. Population 300,000; suburban, industrialized and rural area; county seat eight miles from Baltimore. Generalized service including progressive school program; 48 field nurses. One month's vacation; five-day, 35½ hour week; sick leave, retirement plan. For use of personal car allowance of seven cents per mile. Write: Dr. William H. F. Warthen, Health Officer, Baltimore County Health Dept., Towson 4, Md.

Public Health Nurses—for urban and rural health work. Vacation, sick leave, and retirement benefits. Salary open.

Nursing Supervisor—to direct a public health nursing program in a city-county health department. Must have degree in public health nursing and experience in nursing administration and supervision. Ideal working environment in modern health center. Vacation, sick leave, retirement benefits, and travel allowance. Salary open. Opportunity for developing a training center. Write: Wayne County Board of Health, 1761 Beall Ave., Wooster, Ohio.

POSITIONS WANTED

Health Educator — Male; M.A. in Health Education; B.S. Certificate in industrial relations; R.N. licensed teacher. Ten years experience in nursing. Age 32, married, veteran. Write: **Box H.E.-48**, Employment Service, APHA.

Research Analyst and Writer — M.A., B.S., veteran. Excellent background in social studies. Two years business research and statistical experience. Anxious to learn, hard worker. Willing to train for a beginning position in public health. Will revise future studies for particular requirements of position. Write: Martin H. Astor, 1515 Shakespeare Ave., New York 52, N. Y.

Veterinarian—D.V.M. Degree. Age 32. Six years general practice experience. Interested in opportunity in public health or milk sanitation. Write: **Box V-10**, Employment Service, APHA.

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

WANTED—(a) MEDICAL DIRECTOR; state commission for crippled children; West. (b) DIRECTOR; county (pop. 200,000) health department; headquarters, college town, 100,000. (c) PHYSICIAN OR HEALTH EDUCATOR to direct health division; experience in community organization desired; California. (d) HEALTH EDUCATOR to direct program, county agency of national organization; Midwest. (e) DIRECTOR; visiting nurse association; large city, university center; Southwest. (f) PUBLIC HEALTH NURSE to organize and direct community health agency; duties include directing school nursing; Chicago area. (g) PUBLIC HEALTH NURSE; interesting foreign assignment. (h) PUBLIC HEALTH NURSES to direct rehabilitation programs, important industrial company; New England and South. (i) SANITARIAN; foreign assignment; $7,000. (j) MEDICAL OFFICERS, PUBLIC HEALTH SUPERVISORS, AND STAFF NURSES, SANITARIANS AND SANITARY ENGINEERS, PUBLIC HEALTH VETERINARIANS; state department; expansion program; urban, semiurban, and rural areas. MEDICAL BUREAU, BURNEICE LARSON, PALMOLIVE BUILDING, CHICAGO.

WANTED — OPPORTUNITIES FOR FOLLOWING: (a) PUBLIC HEALTH PHYSICIAN; Diplomate American Board; 12 years' administrative experience, county and metropolitan health departments. (b) PUBLIC HEALTH NURSING ADMINISTRATOR; B.A.; certificate, public health nursing; nine years' experience including four years assistant professor, public health; five, consultant, state health department. (c) HEALTH EDUCATOR; M.A. eastern university; 12 years, director of health education and associate professor, health education, state university. (d) PUBLIC HEALTH ENGINEER; B.S. (Chemical Engineering); S.M. (Sanitary Engineering); nine years' experience all phases of sanitation and public health engineering. MEDICAL BUREAU, BURNEICE LARSON, PALMOLIVE BUILDING, CHICAGO.

NEWS FROM THE FIELD

WHO NEWS

Southeast Asia Regional Meeting

The fifth session of WHO's Southeast Asia Regional Committee, meeting in Bandung, Indonesia, in September, warned governments that requirements for raising the health standards of their people demanded serious attention to the inadequate salaries paid to medical and health workers in some countries.

Both incoming and outgoing chairmen stressed the urgent need for trained medical and health personnel in the rural areas of the Southeast Asia Region of 500,000,000 persons. The Committee adopted a resolution that WHO place its emphasis on obtaining equipment and supplies instead of the procurement of foreign personnel.

A review of the year's work indicated that up to July, 1952, WHO had no fewer than 110 international workers engaged in 65 projects in the area. These projects were assisting governments in the control of a variety of communicable diseases, in developing maternal and child health and nursing services, in strengthening training institutions, and in setting up plants for penicillin and DDT production.

A 1954 program was endorsed, involving the international expenditure of $4,000,000. WHO sponsorship of four international seminar conferences in 1954 was recommended, one on venereal disease control in Surabaya, Indonesia; one for nursing leaders in India; a malaria seminar, perhaps in Bangkok; and one on pediatrics following the Sixth Regional Committee meeting.

Dr. Svasti Daengsvang of Thailand, the retiring chairman, was succeeded by Dr. M. Soerono, secretary-general of the Indonesian Health Ministry. Bangkok, Thailand, was selected for the 1954 meeting.

Inter-American Biostatistics Center

The Chilean Government is setting up an Inter-American Center of Biostatistics in Santiago with the technical assistance of UN and WHO. Its purpose is both to develop statistical records and methods related to health and social fields that are applicable to Latin American countries and to serve as a Latin American training center in vital and health statistics.

Infant Development Seminar

The emotional life of a young child, particularly the nature of its relationship with its mother and father, may set the pattern of subsequent relationships in adult life, including the marriage relationship. This was one of the dominant ideas emerging from the Seminar on Mental Health and Infant Development sponsored by the World Federation of Mental Health, which held a three-week session July 19–August 10 at the Bishop Otter College in Chichester, England.

Clinical studies of the development of children made in France, the United Kingdom, and the United States showed the serious damage inflicted by early forced separation from either or both parents. The studies were conducted under the general direction, respectively, of Dr. Jenny Roudinesco, psychiatrist of les Hopitaux de Paris, Professor D. R. MacCalman, psychiatrist of the University of Leeds, and Dr. Margaret Mead of the American Museum of Natural History.

WHO was one of five agencies cooperating in the Seminar. UNESCO, the International Children's Center of Paris, the U. S. Advisory Mental Health Council, and the Grant Foundation were the others. The faculty of 17 was made up of pediatricians, psychiatrists, psychologists, and social workers from the

three countries in which the studies were carried on.

WHO and its regional offices sent 51 doctors, nurses, and other child health workers from 28 countries as participants, most of whom hold senior or responsible positions related to public health in their own countries.

Dr. Chisholm Visits The Americas

In September and October, Brock Chisholm, M.D., general director of WHO, spent six weeks in Cuba and the United States. He attended the meetings of the WHO Regional Committee for The Americas and the Directing Council of the Pan American Sanitary Organization in Havana, September 15–24. Immediately following he attended the first Inter-American Congress of Public Health held in Havana, September 27–October 1. This brought together a large body of public health workers from all parts of the Western Hemisphere. The American Public Health Association was represented by its president, Gaylord W. Anderson, M.D.

Dr. Chisholm also attended the opening sessions of the General Assembly of the United Nations in New York, participating in the meetings of the Administrative Committee on Coordination. Before returning to Geneva he attended the eightieth Annual Meeting of the American Public Health Association in Cleveland, where he gave the annual banquet address. His subject was "Human Relations in World Health."

MCH Expert to Alexandria Office

Dr. Lennart Hesselvik, associate professor of pediatrics, University of Uppsala, Sweden, has been appointed maternal and child health consultant, Eastern Mediterranean Regional Office in Alexandria. With the aid of WHO and UNICEF, centers for health service to mothers and children have already been opened in Lebanon and Pakistan and are planned for Iran, Iraq, Jordan, Libya, and Syria.

Dr. Hesselvik worked in Austria and Germany with the International Tuberculosis Campaign for mass antituberculosis vaccination.

The Basic Facts About Alcoholism

"Practical and specific aspects of the problem of alcoholism" occupied the second metting of the Alcoholism Subcommittee of WHO's Expert Committee on Mental Health which was held in Copenhagen in October, 1951. The report of that meeting has now been published as *WHO Technical Report Series No. 48*. It indicates that the Committee regards the organization of rehabilitation facilities as among the most urgent problems. It believes that progress in the various phases of the problem is most feasible after the large number of alcoholics throughout the world has been substantially decreased through rehabilitation. It believes further that preventive measures may be more widely accepted as the public comes to understand the nature of the disease through the favorable publicity that will inevitably develop around rehabilitation efforts.

The reprint includes two appendices, one "A Report of a Working Group on the Statistics and the Surveying of Alcoholism and Alcohol Consumption." The second, "The Phases of Alcohol Addiction" describes step by 43 steps the path to addiction beginning with symptomatic drinking through the chronic phase. Columbia University Press, 2960 Broadway, New York 27; 25¢.

COÖPERATING IN BRUCELLOSIS CONTROL

A 14-state campaign for eradication of brucellosis was launched at a three-day meeting in St. Paul in July. Participating were the 150 representatives of interested groups—dairy, beef cattle, and swine raising groups; agricultural and

farm extension organizations; veterinarians, animal disease control groups, health and medical groups, and the agricultural press. It was their opinion that the cost of eradication would be more than offset by the ultimate increase in production brought about by getting rid of the disease. Further, only by eradicating brucellosis in animals can human beings be protected.

To develop an eradication program, formation of a state-wide brucellosis committee in each state was recommended, as was the use of all available tools—ring-testing of milk, blood-testing of animals in suspected herds, calfhood vaccination where indicated, identification and ultimate elimination of reactors, quarantine of infected herds, restrictions on the movement and sale of infected or untested animals.

Ralph L. West, D.V.M., secretary and executive officer of the Minnesota State Live Stock Sanitary Board, who served as chairman, was empowered to call the group together again when the need arises. Other states represented at the conference were Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Missouri, Montana, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

LOCAL PUBLIC HEALTH RESOURCES

Report of Local Public Health Resources 1950, the fourth analysis of public health personnel, facilities, and services in local areas prepared by the Public Health Service has recently been issued. Similar earlier analyses were published on the basis of 1946, 1947, and 1949 data respectively. This latest analysis is based upon the reports of 1,193 full-time health organizations providing local health services as of December 31, 1950.

This report includes new definitions of both a full-time local health unit and a full-time health officer. These are respectively:

A full-time local health unit is one which is officially organized to provide medical, nursing, and sanitation public health services during all of the regularly scheduled work week of the governmental unit to which it is attached and which is under the full-time direction of a health officer or other designated administrative head.

A full-time health officer is one who is officially designated to direct the activities of a health department and who is paid to so function during all of the regularly scheduled work week of the governmental unit to which the department is attached.

Public Health Service Publication No. 232, Washington, D.C.

1951 REGISTERED NURSES INVENTORY

The *1951 Inventory of Professional Registered Nurses* now off the press, presents findings from the second inventory conducted by the American Nurses' Association to determine the number and location of professional registered nurses, both active and inactive, in the United States and its territories. Of more than 700,000 questionnaires sent to registered nurses nearly 500,000 were returned, almost three-quarters. Selected findings from the returns indicate that there were nearly 350,000 nurses actively engaged in nursing.

Copies of the *Inventory* report are available from ANA headquarters, 2 Park Avenue, New York 16; $1.

FOUR PER CENT DISABLED BY ILLNESS DAILY

Estimates of Disabling Illness Prevalence in the United States, Public Health Monograph No. 4, issued by *Public Health Reports*, is based on population surveys made in February, 1949, and September, 1950. The results indicate that on an average day 4,000,000 of the 100,000,000 persons 14 to 64 years of age have a disabling illness. Men have a higher rate of disabling before 20 and after 45 than women, single women have a higher rate than

married at all ages except at 14 to 24 years. Single copies free from Public Inquiries Branch, Division of Public Health Methods, Public Health Service, Washington 25, D. C. Quantity orders from Gov. Ptg. Office; 15¢ single copy, $11.25 per 100.

STANDARDS FOR RESPIRATOR CARE

Because of the complexity of the problem of the poliomyelitis case needing care in a respirator, the New York City Department of Health has prepared *Recommended Standards for the Care of Poliomyelitis Respirator Patients in New York City*. It is intended as a general guide in the development of respirator centers in the city. With the assistance of a technical advisory committee of physicians and nurses under the chairmanship of Dr. Rustin McIntosh, M.D., the standards were developed by the Bureau of Handicapped Children.

RED CROSS NURSING SERVICE ENDED

The American Red Cross Public Health Nursing Service was discontinued in June, 1952, after 40 years of what is called "a highly successful pioneering effort to interest the nation in the health of its rural population." When the Red Cross launched its rural public health nursing program in 1912, only eight nurses in the country were qualified to instruct in rural public health work and only one school offered an acceptable course. By 1947 the Red Cross had established 3,109 public health nursing services in about 1,800 counties of the country. At that time a study committee, believing that the aim of demonstrating the need for organized, public-supported health agencies had been accomplished, recommended that the nursing services be discontinued, a recommendation which the Board of Governors accepted. Thus, the Red Cross joins the Metropolitan and John Hancock Life Insurance Companies in giving up services that other community agencies—official and voluntary—are believed able to carry.

A brief history of the Service and the impact it has had on the development of other public health services will be found in *The Red Cross World* 33, 1 (Jan.–Mar.), 1952.

LASDON MEDICAL RESEARCH GRANTS

More than a score of institutions in the United States and abroad share in recent grants for medical research totaling $264,424 appropriated for 1952 by the Lasdon Foundation. Among the largest grants was one to the Rheumatic Fever Institute of Northwestern University for studies on the influence of dietary factors and enzyme metabolism on the development and treatment of rheumatic fever. Another was given the University College, School of Medicine of Dublin, Ireland, for chemotherapeutic research in the field of tuberculosis, under the direction of Dr. Vincent C. Barry.

The Foundation was established in 1948 by the four Lasdon brothers to support research exclusively in the fields of medicine and health, an interest stemming from their long affiliation with the pharmaceutical industry. Chairman of its Board is William S. Lasdon.

AMA PICKS UP THE BALL

In a move "to elevate further the level of medical care in this country," the AMA is planning a program for the use of doctors' offices to implement the valuable mass surveys of voluntary agencies and public health departments in uncovering chronic illness. Principal diseases uncovered by such surveys are: tuberculosis, diabetes, high blood pressure, heart conditions, and cancer. The new program will be planned by a

committee of six members of the Association who will study case finding methods and develop plans to apply case finding to office practice.

The chairman of this committee is Sidney J. Shipman, M.D., president of the National Tuberculosis Association and chairman of the Council of the California Medical Association. Other members are: Drs. Louis A. Buie, Rochester, Minn.; Paul A. Davis, Akron, Ohio; Leonard W. Larson, Bismarck, N. D.; Walter B. Martin, Norfolk, Va.; and David A. Wood, San Francisco, Calif. Dr. Davis is a Fellow and Dr. Shipman a member of the American Public Health Association.

HYGIENE OF AGING PROGRAM

A hygiene of aging program has been established in the Public Health Service. Its purpose, as indicated by Surgeon General Leonard A. Scheele, is to advise health departments on the development of these activities. The program is further designed to help health departments consider the needs and problems of the aging group in all their programs. Operated by the Division of Chronic Disease and Tuberculosis of the Bureau of State Services, the program is directed by Cletus L. Krag, M.D., former research assistant of the Division of Gerontology, Washington University School of Medicine.

FLUORIDATION BEGUN IN COSTA RICA

San Jose, capital of Costa Rica, with a population of approximately 80,000, is installing a fluoridation system in its water supply. This is believed to be the first instance of a Latin American city using this means to protect the teeth of its children. No statistics are presently available on the extent of dental caries among San Jose children, but the Department of Dental Hygiene of the Ministry of Public Health is making such a survey. The tremendous incidence of dental caries among the adult population, however, has persuaded the Department to take every possible step to save the teeth of the city's children.

Technical assistance and financial aid to carry through the project are being given by the Servicio, which is the operating unit in the Costa Rican Point Four Program. This Program of technical assistance has been going on for the past 10 years as a coöperative effort entered into by the Government of Costa Rica and the United States Government represented by the Institute of Inter-American Affairs. The Servicio will also supervise the purchase and installation of equipment and train operating personnel. This work will be directed by Paul S. Fox, a sanitary engineer from Santa Fe, N. M., who has been working in the Latin American coöperative technical assistance program since 1946. He is now in Costa Rica as chief of field party, Division of Health, Welfare and Housing, the Institute of Inter-American Affairs, and also director of the cooperative Servicio.

VETERINARY PUBLIC HEALTH ORGANIZES

The nucleus of what is said to be the first state association of public health veterinarians in the United States has been formed by a group of 14 veterinarians engaged in public health work in Michigan. The 40 veterinarians employed full time in public health work in the state will be eligible for membership. Membership may also be offered to the veterinarians employed by health departments on a contractual basis.

CHLOROMYCETIN AND BLOOD DYSCRASIAS

The Food and Drug Administration of the Federal Security Agency has announced its decision to permit the continued distribution of the antibiotic Chloromycetin (chloramphenicol) under a revised labeling that will caution

physicians against indiscriminate use. According to the announcement, the Administration has weighed the value of the drug against its capabilities for causing harm and has decided that it should continue to be available for careful use by the medical profession in those serious and sometimes fatal diseases in which its use is necessary.

The FDA's decision was based on the findings and recommendations of a special committee of the National Research Council's Division of Medical Sciences. The committee of authorities on hematology and infectious diseases was headed by John H. Dingle, M.D., professor of preventive medicine at Western Reserve University, Cleveland, Ohio. The committee considered the records of 410 cases of serious blood disorders, of which 177 were definitely known to have been associated with the use of Chloromycetin. It was estimated that since the drug came on the market in 1949, it has been administered to something like eight million patients. The committee came to the following conclusions:

1. Certain cases of serious blood dyscrasias (aplastic anemia, thrombocytopenic purpura, granulocytopenia, and pancytopenia) have been associated with the administration of chloramphenicol.

2. Although this complication has thus far been uncommon, it is sufficiently important to warrant a warning on the label of packages of the drug and in advertisements of the drug and the recommendation that chloramphenicol not be used indiscriminately or for minor infections.

3. When prolonged or intermittent administration is required, adequate blood studies should be carried out.

4. In view of the paucity of information at the present time the Conference hopes that further study of serious reactions to chloramphenicol and other drugs will be promoted. The records of the Veterans Administration and military forces could be of great value in providing some of the desired information.

Hereafter Chloromycetin labeling will be changed to include the following warning:

"Certain blood dyscrasias (aplastic anemia, thrombocytopenic purpura, granulocytopenia and pancytopenia) have been associated with the administration of Chloromycetin. It is essential that adequate blood studies be made when prolonged or intermittent administration of this drug is required. Chloromycetin should not be used indiscriminately or for minor infections."

AWARD TO DR. KESSLER

President Truman announced in Washington on September 4, that Henry H. Kessler, M.D., F.A.P.H.A., of West Orange, N. J., would be the first recipient of the newly established Physicians Award of the President's Committee on Employment of the Physically Handicapped. Dr. Kessler, who is medical director of the Kessler Institute for Rehabilitation, will receive the Award in January, 1953, at the Congress of Industrial Medicine.

POULTRY SANITATION

Short Course, Poultry Sanitation and Inspection, records the proceedings of a four day conference in Omaha on the subject of poultry sanitation. The course was sponsored jointly by official public health and agricultural agencies, the Armed Forces, and members of the poultry packing industry. R. W. Hart, regional engineer, Public Health Service, 2200 Federal Office Bldg., Kansas City 6, Mo., served as coördinator of the conference in which 100 representatives of official agencies and industrial groups participated. A few copies of the mimeographed proceedings, including the 16 papers presented, are available from Mr. Hart.

PERSONALS

C. H. ATKINS,† chief of the Division of Sanitation, Public Health Service, has been assigned as chief sanitary engineer of the Public Health Mission to India, under the Point IV (TCA) program. LEONARD M. BOARD,* has been named to succeed Mr. Atkins.

CLEMENT F. BATELLI, M. D., DR.P.H.,* formerly director of the Bureau of Tuberculosis

and acting health officer, has been appointed director of public health, New Haven (Conn.) Health Department.

C. H. BENNING, M. D. M.P.H.,* formerly director, Regional Blood Center, American National Red Cross, Savannah, Ga., is now health commissioner of Gary, Ind.

KAARE BJERKOMP, chief of Section of the Directorate of Health, Oslo, Norway, a lawyer by profession, who is traveling as a WHO Fellow, visited the offices of the American Public Health Association on September 9, with interest in the legislation and administration for public health services, the appointment of personnel, the education of such personnel, and the establishment of larger units to take care of public health services.

A. BRUUSGAARD, M.D., chief medical inspector of the factories in Norway, on a three-month leave, has a joint appointment with WHO and the International Labor Organization to conduct an occupational health survey, with recommendations, in Egypt.

JOHN A. CARSWELL, M.D., D.P.H.,* became chief of the Section of Preventive Medical Services and deputy commissioner of health, Alaska Department of Health, Juneau, as of August 4. Since 1946 he has been chief of tuberculosis service, Veterans Administration Hospital, Portland, Ore.

GERALD R. CLARK, M.D.,† of the Public Health Service, has been assigned as health officer of Clackamas County, Ore.

MANUEL COHEN † has been appointed assistant director of Montefiore Hospital, New York, N. Y., following a year of administrative training in residency at the hospital and a postgraduate degree in Public Health and Hospital Administration at Yale University's Department of Public Health.

R. L. COIGNY, M.D., of France, since 1947 director of health for the International Refugee Organization, has been appointed chief of the New York Liaison Office of WHO, succeeding P. M. KAUL, M.D.,† of India, who is now in the Geneva office in charge of all WHO matters connected with the UN program of technical assistance.

CLIFFORD H. COLE, M.D.,† of the Arkansas State Health Department, Little Rock, is the new director of the Division of Venereal Disease Control, succeeding W. J. BROWN, M.D.,† who has been transferred by the Public Health Service to the Southeastern Regional Office at Atlanta, Ga.

JOHN W. COLLINS,† formerly health educator, Carter County Health Department (Okla.), has been appointed director of health education, Bartholomew County Tuberculosis Association, Columbus, Ind.

JOHN T. CONNOLLY, M.S.P.H.,† formerly health education assistant, Ulster County Tuberculosis and Health Association, Kingston, N. Y., has been appointed eastern states field representative, Arthritis and Rheumatism Foundation, with headquarters in New York, N. Y.

EDMUND V. COWDRY, M.D.,† director of the Wernse Laboratory of Cancer Research and research professor in anatomy at Washington University School of Medicine, St. Louis, Mo., and president of the International Association of Gerentology, is the new president of the Gerontological Society, Inc.

JOYCE CRANDALL, M.N.S., who has completed a term of supervised nutrition training with the Rochester, N. Y. Visiting Nurses' Association and the Erie County Department of Health, has been appointed nutritionist with the Kentucky State Department of Health, Louisville.

SAM CRISTOFANO is beginning a career in public health engineering as public health engineer, Sanitation Division, Colorado State Health Department, Denver.

H. TRENDLEY DEAN, D.D.S.,* director of the National Institute of Dental Research, Public Health Service, Bethesda, Md., during a recent trip abroad was named an honorary member of the Section of Odontology by the British Royal Society of Medicine.

AGNES DES MARAIS, R.N.,† Public Health Service nurse officer, has been assigned to the Mutual Security Agency Mission in Indo-China.

SHEILA M. DWYER,† for the past year and a half instructor at Teachers College, Columbia University, and a special consultant for the Division of Chronic Disease and Tuberculosis, Public Health Service, is now consultant in nursing, Tuberculosis Advisory Nursing Service (TANS), New York, N. Y.

PRESCOTT S. FARRAR, dairy specialist, Bureau of Food and Chemistry, New Hampshire State Health Department, has resigned to become marketing specialist, Federal Production and Marketing Administration, Philadelphia, Pa.

ANNE MURL FISHER, R.N.,† formerly assistant professor of nursing in the field of microbiology and epidemiology, University of Pittsburgh, has been named consultant in nursing, Division of Health, Welfare and Housing, Institute of Inter-American Affairs, for the United States Point Four Program in El Salvador.

MARY D. FORBES,* Public Health Service nurse officer, formerly with the Division of International Health, has been made public health nurse consultant in Region VIII of the Service with headquarters in Dallas,

Tex. She succeeds FRANCES BUCK, R.N.,† retired from the Service and now in a consultant post with the New Mexico State Health Department, Santa Fe.

ALICE FRAZER has resigned as executive secretary of the Warren County (New York) Tuberculosis Association to become health educator with the Tuberculosis Division of the State Health Department, Albany.

J. M. FURSTMAN, M.D.,* who served as district health officer, Los Angeles County Department of Health, has retired from the Health Department and is now living at 130 San Vicente Blvd., C-4, Santa Monica, Calif.

GUADALUPE GIBSON, trained medical social worker, has been appointed to head the San Antonio (Tex.) Health Department's newly organized program of medical social work.

AGNES GOUTHRO, Public Health Service nurse officer, has been assigned to assist in the cooperative public health program in Iran.

AUGUST H. GROESCHEL, M.D.,* assistant medical director of New York Hospital and assistant medical director of the Health Insurance Plan of Greater New York, has been named director of the Philadelphia General Hospital, Pa.

ANN HAUSER, R.N., M.P.H.,† formerly education director, Public Health Nursing Division, Missouri State Health Department, has been appointed acting director of public health nursing, School of Public Health, University of Minnesota, Minneapolis.

EDITH HEIDE, R.N., formerly public health coordinator, Children's Hospital, Denver, is now field representative, Hospital Standards and Consultation Section, Colorado State Health Department, Denver, succeeding JEANNE HECKEL, R.N.†

JOSEPH HIRSH,* consultant to the Division of Medical Sciences, National Research Council, has been appointed a member of the eight-man Advisory Committee on Alcoholism to the New York State Mental Health Commission, Albany, N. Y.

LYNWOOD M. HOPPLE, M.D., during the past year on the staff of the Denver Bureau of Health and Hospitals, is the new chief, Mental Health Section, Colorado State Health Department, Denver

WALTER C. HUMBERT, M.D.,* formerly director, Blood Program, American National Red Cross, St. Louis, Mo., has been appointed director, Pitt County Health Department (N. C.), with headquarters in Greenville.

ALVIN R. JACOBSON, PH.D.,† associate professor of sanitary science, Columbia University School of Public Health, New York, N. Y., has been placed in charge of the Division of Sanitary Science of the University.

MILDRED JONES, R.N., Public Health Service nurse officer, for the last four years on public health nursing assignments in Fulton County, Ga., and Caroline County, Md., has been assigned to assist in the coöperative public health program in Jordan, the first nurse assigned to Jordan under the United States Point Four Program.

CLARENCE KEEFER,† deputy sewerage engineer, Baltimore, Md., Bureau of Sewers, has received the 1952 Thomas F. Rowland prize of the American Society of Civil Engineers, one of eight annual awards made by the Society for technical papers. He wrote on, "Improvements at the Back River Sewage Works, Baltimore."

CLARENCE W. KEHOE,* formerly assistant executive director, Illinois Tuberculosis Association, is now director, Seal Sale Service, on the staff of the National Tuberculosis Association, New York, N. Y.

ROBERT L. KERNS, D.V.M., has been assigned to the Arkansas State Health Department, Little Rock, to assist in the control of diseases transmitted to human beings by animals.

HENRY W. KOLBE, M.D.,† formerly medical superintendent, Harlem Hospital, has been appointed a general medical superintendent of the New York City Department of Hospitals where he will have over-all supervision of the 12 municipal hospitals in the boroughs of Brooklyn, Bronx, and Queens.

JOSEPH R. KRAFT, M.D., has succeeded E. H. VALENTINE, M.D., as director of laboratories, Denver (Colo.) Department of Health and Hospitals.

EDWARD KUPKA, M.D.,* chief, Bureau of Tuberculosis, California State Department of Public Health, Berkeley, is on a three-month leave of absence to assist in tuberculosis control activities of American Samoa. During his absence CHESLEY BUSH, M.D.,* is acting chief of the Bureau.

CHING-YE LIANG, formerly with the Community Service Society as staff nutritionist working with the Chinese people in the Lower East Side of New York City, has been appointed nutrition consultant at the Harlem Tuberculosis and Health Committee, a branch office of the New York Tuberculosis and Health Association.

SOL S. LIPSON,* director of program development, Public Health Division, American Heart Association, has been named director of health education, National Tuberculosis Association, New York, N. Y.

HELEN G. LU-AFFATT, who recently organized

* Fellow
† Member.

the first home delivery service of babies in Beirut, at the hospital of the American University, is in Tripoli, appointed by WHO as adviser to the Government of Libya on nursing problems.

ROBERT H. MANHEIMER, M.D., adjunct in medicine, Montefiore Hospital, New York, N. Y., has been appointed medical director of the Arthritis and Rheumatism Foundation's New York Chapter.

WILLIAM F. MCGLONE, president of the Colorado State Board of Health and of the Denver Public Health Council, received the Colorado Public Health Association's Sabin Award for "outstanding contributions to public health in Colorado," at the 1952 Annual Meeting of the Western Branch of the American Public Health Association.

GEORGE A. MICHAEL, acting director for the past 18 months, has been made director of the Division of Food and Drug, Massachusetts Department of Public Health, Boston, succeeding CARL S. FERGUSON, retired.

JULIA M. MILLER, R.N., has been named director of the Division of Nursing Education, National League for Nursing, New York, N. Y., which recently was organized to replace the Association of Collegiate Schools of Nursing, National League for Nursing Education, and the National Organization for Public Health Nursing.

CLARENCE A. MILLSPAUGH, since 1947 executive assistant to the New York State Health Commissioner, has resigned to become assistant to the president of the New York State University.

MARY MOSSMAN, has been appointed health education assistant of the Ulster County Tuberculosis and Health Association (N.Y.).

EDWARD C. MULLINIES, LT. COL., MC, USA,† most recently preventive medical officer in Korea, is director of the Industrial Hygiene Service, Tennessee State Health Department, Nashville.

ALEXANDER A. NEUWIRTH, M.D., M.P.H.,† has been appointed deputy director of health, New Haven, Conn., with responsibility as director of the Bureau of Medical Services.

LOUIS OLSEN,* health officer of Palo Alto, Calif., for 35 years, has retired on completion of the consolidation of the Palo Alto and Santa Clara County Health Departments. He and Mrs. Olsen will take a trailer tour of the United States.

CLARENCE E. PEARSON,† who has just completed work at the School of Public Health, University of North Carolina, is now health educator with the Du Page County (Ill.), Health Department, with headquarters in Villa Park.

GEORGE A. PRINCE,† formerly chief of the General Sanitation Section, Denver Bureau of Health and Hospitals, has been made chief, Public Health Engineering Section, Sanitation Division, Colorado State Health Department, Denver.

JOSEPH PUELO, JR., D.V.M., in private practice in Maine for the past year, has recently joined the Erie County (N. Y.) Health Department staff as veterinarian—milk control.

DOMINGO F. RAMOS Y DELGADO, M.D.,* formerly minister of health, Cuba, has been appointed director-general, Finlay Institute, Havana.

RONALD V. SAF, formerly claims adjuster, Hawkeye-Security Insurance Company, is now an inspector in the Division of Licensure and Registration, Iowa State Health Department, Des Moines.

LUMIR R. SAFARIK, M.D., has been made chief of Medical Services, Denver (Colo.) General Hospital, succeeding the late SOLOMON KAUVER, M.D.

ALFRED SASSER, JR., since 1949 coördinator of adjunctive therapies, State Hospital for Epileptics, Parsons, Kans., has been appointed consultant in employment, National Society for Crippled Children and Adults, Chicago, Ill., succeeding EDWARD L. MORRIS, who has become executive director of Chicago's Portal House.

ARGUYLE SEIKEL,† formerly director of health education, Denver Department of Health and Hospitals, has been appointed executive director, Colorado Heart Association, Denver.

ROBERT S. SHAW,† in the Department since 1931, has been promoted to chief public health engineer, Division of Environmental Sanitation, New Jersey State Department of Health, Trenton, succeeding the late HARRY P. CROFT.

DOROTHY SCHOBER,† heart work consultant, New York State Committee on Tuberculosis and Public Health, has been appointed program consultant, American Heart Association, New York, N. Y., working with JOHN FERREE, M.D.,* director of public health.

MILTON L. SHURR,* formerly associate executive secretary of the Health Division, Welfare Council of Metropolitan Chicago, has been appointed secretary, Health and Hospital Planning Council of the Council of Social Agencies, New Haven, Conn.

DONALD C. SMELZER, M.D.,† executive director, Hospital Planning Agency, Citizens' Conference on Hospital Capital Requirements, has been appointed executive director, Lancaster General Hospital, Lancaster, Pa.

JAMES H. STEWART, M.D.,† formerly with Polk County Health Department, has become health officer of the Tri-County District Health Department, including Jefferson, Crook, and Deschutes Counties, Ore.

CHALMERS C. STROUP,† executive secretary, Lehigh County (Pa.) Tuberculosis and Health Society has been appointed public health chairman of the Pennsylvania Junior Chamber of Commerce.

EDITH R. STUCKEY,† public information director of the New Jersey Tuberculosis League since 1927, retired on July 1. She was presented with a certificate for distinguished service by the League at its spring conference.

ABDOL HOSSEIN TABA, M.D., director of the Health Department of the Iran State Railways for the past 11 years, and for the past 3 years chief delegate of Iran to the World Health Assembly in Geneva, has been made deputy director of the Eastern Mediterranean Region of WHO, with headquarters in Alexandria.

HENRY THERKILDSEN, a recent graduate of Bradley University with a major in biology, has been appointed food sanitarian, Peoria (Ill.) Health Department, succeeding ROBERT CASSELL, resigned to accept a position with the Federal Civil Service Commission.

NORMAN H. TOPPING, M.D.,† assistant surgeon general of the Public Health Service and associate director of the National Institutes of Health, has resigned to accept appointment as vice-president of the University of Pennsylvania, Philadelphia, in charge of medical affairs. In this capacity he will be the principal administrator of the University's medical program, including the School of Medicine, Dentistry, Graduate Medicine, Veterinary Medicine, Nursing Education and Auxiliary Medical Services, as well as the related hospitals and laboratories.

ORLEN J. WEIMANN, sanitarian in the restaurant, food, and drug sanitation program, Colorado State Health Department, Denver, has been promoted to chief, Food, Milk, and Drug Section of the Division.

JAMES HICKMAN WELLS, M.D.,† health officer, Christian County (Ky.) Health Department since 1950, has been appointed health officer for the Egyptian Tri-County Health Department, serving Gallatin, Saline, and White Counties.

JOHN M. WHITNEY, M.D.,* of the staff of the American National Red Cross, Washington, D. C., has been commissioned as medical director, Public Health Service Reserve, and assigned to the Federal Civil Defense Administration, Region III, Atlanta, Ga., as medical officer.

HUNTINGTON WILLIAMS, M.D., DR.P.H.,* commissioner of health, Baltimore, Md., left New York on September 16 for a study tour of the German Federal Republic as a guest of the German Federal Government. The Bundestag in expressing its appreciation of the generous exchange program carried out by the United States Government selected 100 persons from the United States who were invited in groups of eight, Dr. Williams representing "public administration, local planning and reconstruction."

KATHLEEN WILKINSON WOOTTEN,* retired on September 1, becoming emeritus professor of health, Georgia State College for Women, Milledgeville, Ga., after 35 years of service. MRS. Wootten looks forward to active voluntary agency work together with writing and consultation services.

CALVIN WINEY, formerly in the U. S. Public Health Service Regional office, Cleveland, Ohio, is now district sanitary engineer, Alaska Department of Health, Anchorage.

DEATHS

C. C. GANS, M.D., health officer of San Mateo County, Calif., from 1935 until his retirement in 1948, on June 18.

M. M. NAKADATE, D.D.S.,† of Los Angeles, Calif. (Dental Health Section).

OLE SALTHE,* executive secretary, Nutrition Foundation, Inc., since its establishment in 1942, on September 10 at the age of 65 (Food and Nutrition Section).

LOUIS SCHNEIDER, M.D., PH.G.,† of Newark, N. J. (Medical Care Section).

EMANUEL B. SCHOENBACH, M.D.,* professor of medicine, State University of New York, College of Medicine, New York, N. Y., and director of medical services, Maimonides Hospital, Brooklyn, on September 6 at the age of 40, of coronary thrombosis (Epidemiology Section).

DORA J. SILVERMAN, M.D.,† physician of Los Angeles, Calif., on June 14 (Unaffiliated).

CONFERENCES AND DATES

Coming in November, December, 1952, and January 1953:

American Academy of Tropical Medicine. Galveston, TEX. Nov. 13–15.

American Association for Advancement of Science. Boston, Mass. Dec. 26–31.

American Association of Schools of Social Work. St. Louis, Mo. Jan. 21–24, 1953.

* Fellow.
† Member.

American Economic Association. Conrad Hilton Hotel, Chicago, Ill. Dec. 27–29.
American Medical Association. Clinical Session. Denver, Colo. Dec. 2–5.
American Municipal Association. Hotel Statler, Los Angeles, Calif. Dec. 1–3.
American Society of Heating & Ventilating Engineers. Chicago, Ill. Jan. 26–29, 1953.
American Society of Tropical Medicine and Hygiene. Galveston, Tex. Nov. 13–15.
American Standards Association. Waldorf-Astoria Hotel, New York, N. Y. Nov. 19.
American Statistical Association. Palmer House, Chicago, Ill. Dec. 27–29.
American Water Works Association:
Cuban Section. Havana. Dec. 4–6.
Joint Meeting of Alabama-Mississippi and Florida Section, and Florida Sewage and Industrial Waste Association. San Carlos Hotel, Pensacola, Fla. Nov. 16–19.
North Carolina Section. Skyland Hotel, Hendersonville. Nov. 10–12.
Virginia Section. Chamberlin Hotel, Old Point Comfort. Nov. 5–7.
Association of American Medical Colleges and Conference of Professors of Preventive Medicine. Annual Meeting. The Broadmoor, Colorado Springs, Colo. Nov. 10–12.
Association of Military Surgeons of the United States. Washington, D. C. Nov. 17–19.
Industrial Hygiene Foundation. Annual Meeting. Pittsburgh, Pa. Nov. 19–20.
International Conference of Social Workers. Madras, India. Dec. 14–19.
International Study Conference on Child Welfare. Bombay, India. Dec. 5–12.
National Association for Mental Health. Annual Meeting. Henry Hudson Hotel, New York, N. Y. Nov. 17–19.
National Social Welfare Assembly. Annual Meeting. Hotel Astor, New York, N. Y. Nov. 13–14.
Oklahoma Public Health Association. Norman. Nov. 20–22.
World Health Organization. Mexico City, Mexico. Nov. 2–8.

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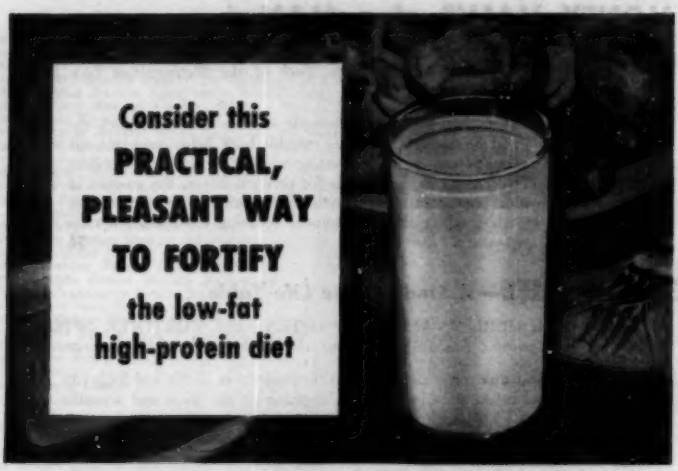

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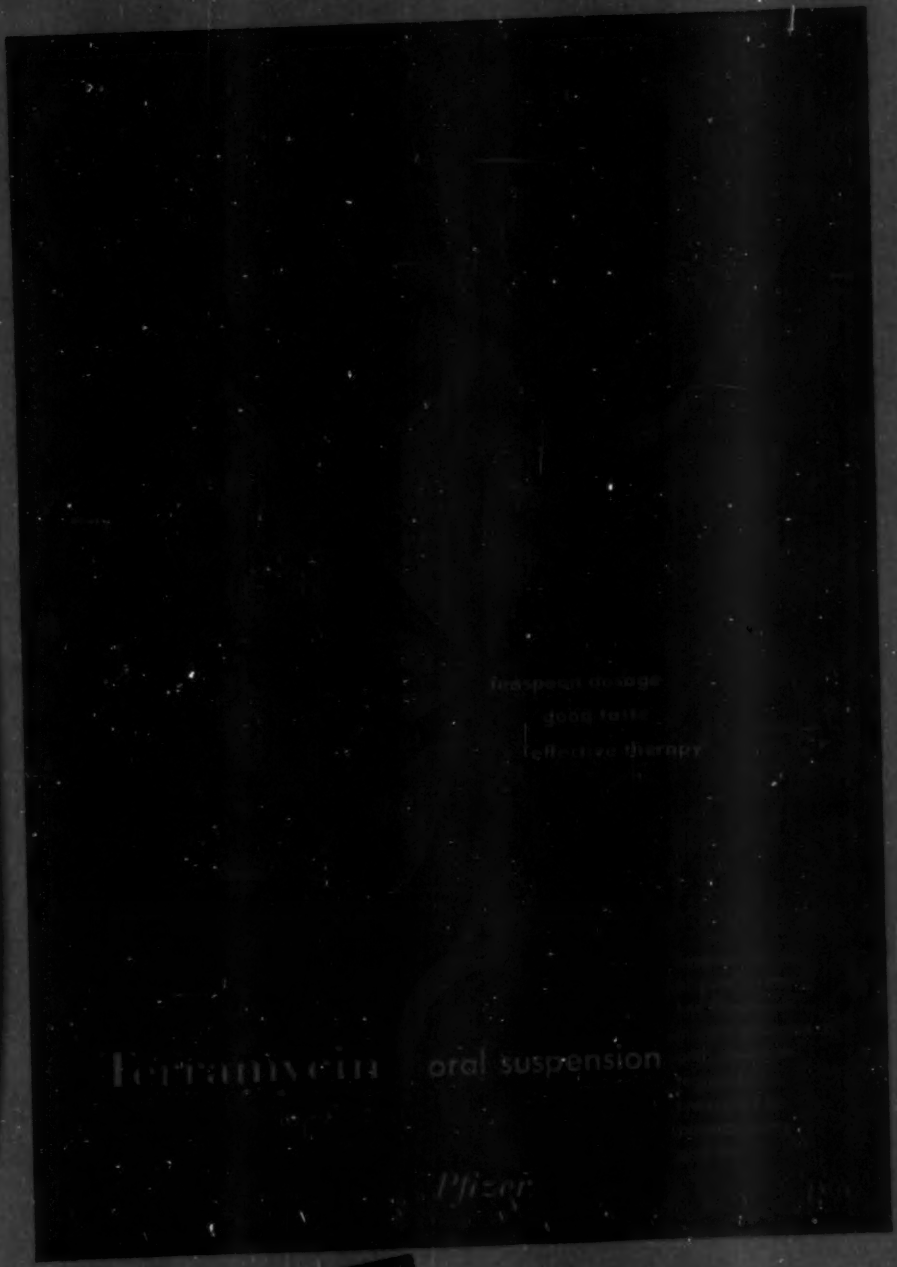

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